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THE  
ARCHIVES OF PEDIATRICS:

A MONTHLY JOURNAL DEVOTED TO THE DISEASES OF

INFANTS AND YOUNG CHILDREN.

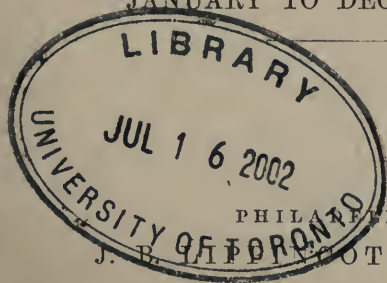
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THE  
ARCHIVES OF PEDIATRICS.

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VOL. V.]

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[No. 1.

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**Original Communications.**

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THERAPEUTICS OF INFANCY AND CHILD-  
HOOD.\*

BY A. JACOBI, M.D.,

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eases of Children in the College of Physicians and Surgeons, New York, etc.

I.—FEEDING OF SICK CHILDREN.

DIETETICS must be considered a part of therapeutics. The two must always go hand in hand. Sydenham knew the fact that many diseases are removed by a correct mode of living, and nutrition; and the men who established therapeutical schools on certain positive principles or preconceived ideas, arranged their dietetical and their medicinal and surgical rules on the same basis. Thus, Broussais, among others, while he purged and bled, crowned his work with starvation to such an extent that Graves, in 1843, had to come forward with the declaration that the systematic starvation of the disease ended in the destruction of the patient. It was Chossat, finally, who proved that inanition had many of the symptoms of fever, and that a starvation diet was liable to increase its dangers.

Still, there are no universal rules for feeding, as there are none for medication. There are, however, certain indications which can always be fulfilled in the treatment of individual

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cases. As intellect and knowledge are required for finding those indications, so there is need of tact and experience to apply and fulfil them. Some of them are plain enough. It is clear that in conditions of great debility there must be no further reduction of strength; an irritated cerebrum must not be excited; hemorrhages, peritonitis, dysentery, perityphlitis require absolute rest; a hyperæsthetic stomach must not be overfed; a gastro-enteritis resulting from the presence of ferments must do without milk; convalescence and acute inflammatory fevers must be protected. Still, there are chronic fevers with fair digestion, which permit of generous feeding. All these indications and rules are equally valid for both the adult and the young. Still, the latter have some peculiarities which alter the application of general rules to a considerable extent, for several reasons. Of these I shall mention but a few in this connection. Habits, which play an all-important part in the nosology of adults, such as alcohol, narcotics, sexual abuses, are not observed—unless very exceptionally—in the child. Cardiac debility, which is the constant danger of the senile period, and a frequent one in the adult, is not so frequent in the very young, partly because the heart is larger and more powerful, compared with the rest of the body, and partly because it has not had so much time and opportunity to become diseased. On the other hand, general metamorphosis is very rapid in the young, because of both the rapidity of the vital processes, and the constant necessity of adding to the tissue of the body, besides keeping up the equilibrium. Therefore inanition is not tolerated for a long time. Thus the child cannot long remain without being fed, and, therefore, its digestive organs require permanent attention. Their physiology must be carefully studied in both the healthy and morbid conditions. What the child eats is of but little consequence compared with what it digests. Nor are its subjective sensations the proper guides for the selection of foods or the times of feeding. It is not always true that where there is no appetite there is no digestion. Nor are the pangs of hunger or the temptations of cravings safe counsellors. Nor does the condition of the tongue, to which we are apt to turn as one of our advisers in many of the ailments of the adult,

deserve of the same confidence in the young, for the frequent local processes inside the oral cavity are very apt to mislead us.

From the very first month of life a distinct diastatic effect is produced by the oral secretion; it increases with every month. Even infusions of the parotids, prepared at different times after death, produce the same effect. Infusions, however, of the pancreas taken from the bodies of infants who have lived three weeks, produce no such changes. The diastatic power of the pancreas begins with the fourth week only, and remains feeble up to the end of the first year.

Zweifel experimented with infusions of different glands. That of the submaxillary glands of an infant did not transform starch into sugar; even after the lapse of a whole hour. The effect of an infusion of the parotid of a baby seven days old was distinct after four minutes; however, that of the parotid of a baby which had died at the age of eighteen days, of gastro-enteritis, did not show itself until the lapse of three-quarters of an hour. Nor was a diastatic result obtained by a similar infusion made of the parotids of a baby prematurely born, and one who died of diarrhœa and debility.

It is a remarkable fact that different varieties of starch are not changed by saliva into grape-sugar in the same length of time. In reference to the time required, however, there is no uniformity of opinion. Solera found that the transformation of the starch of the potato was the most rapid. Next came that of Indian corn, next wheat, and the transformation of the starch of rice was the slowest. According to Malay, raw starch changes slowly, boiled starch quickly. According to him, that of the potato required from two to four hours; that of wheat from one-half to one hour; of barley from ten to fifteen minutes; of oats from five to seven minutes; of rye from three to six minutes; of potato paste five minutes.

It is important to know that the effect produced by saliva persists in the stomach for a period of from one-half to two hours. But it ceases altogether, and starch will no longer be changed into grape-sugar, inside the stomach as soon as the secretion of hydrochloric acid has begun in the digestive process. This is a very important fact, because it shows that the farinaceous food of the infant or child, though it be not



masticated, and pass the mouth very rapidly, is still under the influence of the saliva in the stomach, for some time.

Hydrochloric acid is not secreted at once. The first acids in the stomach while digestion is going on are organic, mostly lactic. This is found to be contained in that organ when gastric juice is removed from it in the first period of digestion. Thus in a gastrostomized boy Uffelmann found under normal circumstances, and in the absence of fever, during the first half-hour, lactic acid only; afterwards hydrochloric acid.\* The latter is not met with during fever and a considerable degree of gastric catarrh (and also in dilatation of the stomach resulting from constriction of the pylorus). In these conditions farinacea (amylacea) are taken to advantage, principally because the diastatic effect of saliva is not disturbed.

Some of the main points to be remembered from the foregoing are these:

There is diminution or absence of saliva from the parotid in the very young suffering from diarrhoea and debility. Thus the very young ought to have but little starchy food, or sometimes none at all in these conditions, particularly as the pancreas cannot be relied on for diastatic action in the first weeks.

Whatever saliva, however, has been secreted and is swallowed, continues its action in the stomach as long as there is

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\* This agrees with what Ewald and Boas published lately as the result of their experiments also. But they claim to have found hydrochloric acid only, when a decoction of starch alone was introduced into the stomach. Still later Th. Rosenheim (*Centralbl. f. d. Med. Wiss.*, November 12, 1887) reports as follows, after the ingestion of fifty grammes of bunn and one hundred and fifty of water: Free hydrochloric acid makes its appearance in the healthy stomach very early, 0.3 p. m. after fifteen minutes, 1.0 p. m. after thirty minutes. This quantity or more is found until the elimination of chyme has been completed. From beginning to end there is lactic acid to a uniform amount, viz., 0.3 p. m. In carcinoma there was but 0.1 p. m. of hydrochloric acid, in hyperacidity 1.0 p. m. In every case and in every period of digestion there was lactic acid. There was less hydrochloric acid (but 0.2 p. m. after an hour) and a fair amount of lactic acid when carbo-hydrates only were taken, no matter whether saliva was admitted to, or excluded from, the stomach.

These data are here added for the purpose of showing that the difficulties of arriving at absolute facts are exceedingly great. Still, the results of the three observers do not differ too much from the accepted doctrine.

no hydrochloric acid in it. This in the healthy is secreted only after half an hour or later. In the feverish and catarrhal stomach very much later or not at all. Thus what saliva is present, displays its diastatic action continually. Thus the food craved for and digested is farinaceous. Animal food which requires hydrochloric acid is not wanted, nor is it readily digested.

To discuss here all the functions of the stomach is not necessary. In anæmia, convalescence, particularly in fevers, they are impaired. Both pepsin and hydrochloric acid are wanting. To increase their secretion large quantities of WATER are required.

Infants' food ought to be mixed with large quantities of water, for reasons given on other occasions, under ordinary circumstances. In diseased conditions of the stomach the free dilution of children's nourishment with water is demanded upon the following additional facts. Only to a certain limit will pepsin be furnished for digestive purposes. Probably a portion of this is not entirely utilized, because a great quantity of water is necessary to assist in pepsin digestion. In artificial digestion albumin often remains unchanged until large quantities of acidulated water are supplied. Without doubt many disturbances of digestion are to be explained by a deficiency of water, certainly many more than are due to an excess of it, for the latter is speedily relieved by rapid absorption.

For the reasons given, I advocate under all conditions a plentiful addition of water to children's food. In this connection I would lay stress upon the fact that, as a rule, small children receive water only as they get it in their milk or milk food. Alike in summer and in winter, it is probable that the fact seldom occurs to a mother or nurse that a child may be thirsty without being hungry at the same time. Certainly many a discomfort and even sickness in a child is conditioned upon the fact that it has been compelled to eat in order to get its thirst satisfied, and often has to suffer thirst because the over-stimulated and injured stomach will take no more nourishment at irregular and too short intervals. There are even normal products of digestion capable of disturbances

in the digestive process, chief among which is peptone itself, which is not absorbed unless it be greatly diluted. I have, therefore, considered it necessary in preparing the rules for the feeding of children, which the New York Health Department has annually published and distributed since 1872, to insist upon giving infants who cannot ask in so many words for it, an occasional drink of water, at least during the hot weather. When there is the least ground for the supposition that the drinking-water is contaminated with germs of disease, or where it is unusually hard, it should be boiled before its admixture with children's food, whether the diet be milk or a mixed one. In general it will give greater satisfaction to use the boiled water systematically, even though there be no apparent urgency for it in the cases of very young infants.

There are many other indications for the administration of water in the diseases of the young. In many morbid conditions it is wanting. Perspiration, diarrhœa, general inanition, feverish diseases, diminish its quantity in the tissues and blood-vessels. Thus an inspissation of the blood takes place, thromboses form in the small veins of distant parts or the viscera, in the brain they lead to convulsions and defective innervation (hydroencephaloid), in the limbs to œdema or gangrene. The remedy is water in sufficient quantities. Where the stomach rebels, the hungry lymph-ducts of the rectum will greedily absorb an ounce or much more, injected every hour or two. In many a case life is saved in this manner.

Where general metamorphosis is slow, water in abundance increases the elimination of urea and carbonic acid. Where the urine is scanty and of an undue specific gravity, water protects the kidneys from undue irritation. It acts on the mucous membranes as it does on the external integuments. In laryngitis and bronchitis it liquefies viscid expectoration, in many forms of constipation it acts beneficially by increasing the secretion of the muciparous glands of the intestines. Ice and ice-water, or iced carbonated water, in small quantities, but frequent doses, relieve hyperæsthesia of the stomach and stop vomiting. Warm water acts as an emetic, hot water injected into the rectum combats collapse. In this very connection, however, I may allude to what good may be done by absti-



nence from water. In some forms of acute gastro-enteritis, where vomiting and diarrhœa are excessive, the only salvation is in total abstinence for from four to eight or ten hours. Not infrequently the turning-point in the course of the threatened danger dates from the commencement of what appears to be cruel starvation.

A regular addition to the milk food of infants and children is that of SUGAR. Its percentage in the milk of the woman, ass, and mare is larger than that of the cow. Immediately after the milking of the cow the milk-sugar begins to be changed into lactic acid. This process, together with the gradual conversion of fat into acid, is the cause of curdling. The large amount of sugar in woman's milk, together with its smaller percentage of casein and butter, gives it the peculiar bluish color and furnishes the colostrum, which contains plenty of salts besides, its tendency to loosen the bowels. This property becomes manifest, sometimes, under abnormal circumstances. Thus in the milk of anæmic women sugar is occasionally found to an unusual degree. In their cases the other solid matters may also be diminished, still, this is not uniformly so. The infants, however, suffer often from obstinate diarrhœa.

The conversion of milk-sugar into lactic acid takes place very rapidly. When it takes place in cow's milk this turns sour at once. Not infrequently is it sour from the first; it has been found to be so in the udder; in most cases it is "amphoteric," neutral. Thus the question arises what kind of sugar is to be used as the addition to the food of children both well and sick.

Cane-sugar is not so easily transformed. Indeed, it is utilized for the purpose of counteracting the rapid conversion of milk-sugar, and for the preservation of articles of food in general. Trade is not so slow in availing itself of the results of organic chemistry as the profession. Condensed milk remains intact a long time on account of the plentiful addition of cane-sugar, in spite of the original presence of milk-sugar in it. Therefore it is not at all an indifferent matter whether milk-sugar or cane-sugar be added to the food of infants and children. I have always insisted upon the selection of the latter for that purpose.

In the sick the absorption of sugar is slower than in the healthy. Besides, during most diseases, particularly those of the alimentary canal, there is more ferment in the mouth and stomach. Thus but little sugar ought to be given, and never in a concentrated form. Grape-sugar and dextrin are absorbed equally. Cane-sugar, according to Pavy, is partly inverted and partly absorbed. All appear to be changed, when given in moderate quantities, into carbonic acid and water, even during moderate fevers.

In that form of constipation of small infants which depends on a relative absence of sugar and superabundance of casein in the breast-milk, the addition of sugar acts very favorably. A piece of loaf-sugar (a teaspoonful or less) dissolved in tepid water (or oatmeal water) must be given before each nursing, and will often prove the only remedy required to regulate the bowels.

The physiological effect of CHLORIDE OF SODIUM is very important, no matter whether it is directly introduced through the mother's milk, or added as a condiment to cow's milk, or vegetable diet. Both of the latter contain more potassium than sodium, and neither ought ever to be given, to the well or sick, without the addition of table-salt. A portion of that which is introduced may be absorbed in solution; another part is, however, broken up into another sodium salt, and hydrochloric acid. Thus it serves directly as an excitant to the secretion of the glands, and facilitates digestion. Therefore during diseases in which the secretion of gastric juice is interfered with, or in the beginning of convalescence, when both the secreting faculties and the muscular power of the stomach are wanting, and the necessity of resorting to nitrogenous food is apparent, an ample supply of salt ought to be furnished. The excess of acid which may get into the intestinal canal unites with the sodium of the bile in the duodenum, and assists in producing a second combination of chloride of sodium, which again is dissolved in the intestines and absorbed. Its action in the circulation is well understood: it enhances the vital processes, mainly by accelerating tissue-changes through the elimination of more urea and carbonic acid.

A very important fact is also this: that the addition of

chloride of sodium prevents the solid coagulation of milk by either rennet or gastric juice. Thus cow's milk ought never to be given without table-salt, and the latter ought to be added to woman's milk when it behaves like cow's milk in regard to solid curdling and consequent indigestibility.

Habitual constipation of children is also influenced beneficially, for two reasons: not only is the food made more digestible, but the secretions of the alimentary canal, both serous and glandular, are made more effective by its presence.

A certain amount of *fat* is digested even in fevers of moderate severity, thus also in typhoid fever. But it is a good rule to rather reduce its quantity, because when infants were fed on cow's milk during capillary bronchitis, the fat in the fæces amounted to forty per cent. of the solid constituents. A few additional remarks will render the subject clearer, and show that it is very easy to give too much fat.

There is a large amount of fæces, although the baby receives absolutely nothing but mother's milk. What has been called detritus in the fæces is not exclusively undigested casein, but principally fat and large masses of intestinal epithelium. This so-called detritus is not soluble in water, acids, or alkalis, but quite soluble in alcohol and ether.

Casein is present only when it has been taken in too large a quantity, or when there is too much free acid in the stomach. In those cases there are large quantities in the fæces.

An important practical application of this fact is the following: As it is true that fat is not completely absorbed, even under the most normal circumstances; as free fat acids are so easily formed and accumulated; as they are found in moderate quantities, even in healthy babies; as a surplus is very apt to derange digestion and assimilation, and to prevent the normal secretion of either of the digestive fluids; as there is a superabundance of fat in the normal food of the nursling, the conclusion is justified that we should be very careful in preparing foods for the healthy or sick. It is very easy to give too much fat. It is hardly probable that there is too little.

Under the head of "Fat Diarrhœa" German journals and a few text-books speak of a diarrhœa, the chief characteristic of which is the presence of a large quantity of fat in the stools.



The normal fæces of the newly-born contain ten or twelve per cent., sometimes more, of fat. In abnormal cases, even when the food does not contain it, the fæces may contain from forty to seventy per cent. of fat.

The microscope reveals in serious cases fat, almost to the exclusion of everything else, sometimes pure, and other times in more or less regular needles. The anatomical condition in fat diarrhoea may vary, but in the majority of cases we have to deal with a simple catarrh of the intestinal tract. There are changes in, and exfoliation of, the epithelium of the small intestine, swelling of the mucous membrane of the duodenum, with obstruction to the flow of the secretions of both liver and pancreas, and such hyperplasia of the mesenteric lymph bodies as to impede the absorption and circulation of chyle. Finally, in a very few instances, anatomical changes were found in the pancreas resembling those which in the adult interfere with the emulsion of fat.

No improvement is possible unless the quantity of fat contained in the food be largely diminished. The administration of cream and the routine treatment with cod-liver oil are equally injurious in these cases.

In feeding the sick no new principles must be sought for. The sick child is still the child, and the physiological laws hold their own under changed circumstances. No new articles of food can be discovered or invented, only the preparation or mixture of those in ordinary use may change temporarily, or a restriction in their number or amount take place. Thus, I cannot undertake to give in full the methods of feeding infants and children. In several previous publications have I done so, and must refer to them. I will only repeat a few rules, leaving the reasons for them to the thoughtfulness or the recollection of the reader.

The principal SUBSTITUTES for breast-milk are those of the cow and the goat. The mixed milk of a dairy is preferable to that of one cow. Cow's milk must be boiled before being used. Condensed milk is not a uniform article, and its use precarious for that and other reasons. Goat's milk contains too much casein and fat, besides being otherwise incongruous. Skimmed milk obtained in the usual way, by allowing the

cream to rise in the course of time, is objectionable, because such milk is always acidulated. The caseins of cow's and woman's milk differ both chemically and physiologically. The former is less digestible. There ought to be no more than one per cent. of casein in every infant food. Dilution with water alone may appear to be harmless in many instances, for some children thrive on it. More, however, appear only to do so; for increasing weight and obesity are not synonymous with health and strength. A better way to dilute cow's milk, and at the same time to render its casein less liable to coagulate in large lumps, is the addition of decoctions of cereals. It has been stated before, that a small amount of starch is digested at the very earliest age. But cereals containing a small percentage of it are to be preferred. Barley and oatmeal have an almost equal chemical composition; but the latter has a greater tendency to loosen the bowels. Thus, where there is a tendency to diarrhœa, barley ought to be preferred; in cases of constipation, oatmeal. The whole barley-corn, ground for the purpose, should be used for small children, because of the protein being mostly contained inside and near the very husk. The newly-born ought to have its boiled milk (sugared and salted) mixed with four or five times its quantity of barley-water, the baby of six months equal parts. Gum arabic and gelatin can also be utilized to advantage in a similar manner. They are not only diluents, but also nutrients under the influence of hydrochloric acid. Thus in acute and debilitating diseases which furnish no, or little, hydrochloric acid in the gastric secretion, a small quantity of the latter must be provided for.

Such practitioners and authors who convinced themselves of the ill success often attending the use of milk, or watered milk, commenced at an early period to mix it with MEAT-soups, meat-tea, or egg. Bretonneau reported, as early as 1818, that "tabes mesenterica" disappeared, in the hospital of Tours, from among the children fed on beef-soup and milk. This mixture Vauquelin declared to come nearest to mother's milk of all preparations. The administration of some beef-soup, well made, a cupful every day (mutton-broth when there is a tendency to diarrhœa), is advisable towards the end of the

first year. Long before this period, indeed at any time during infancy, it is indicated in cases of early rhachitis, rhachitical constipation, undue adiposity, and retarded teething.

Beef-tea, well made, in a bottle swimming in the water-bath, is still believed by some to be the model food. That it is not so rich in soluble albuminoids as was believed, ought to be generally understood by this time. What, however, it does contain in large quantities, is salts. Thus it is a dangerous article in summer diarrhœa, and must never be administered by itself. When given at all, it ought to be in combination with farinacea, raw albumin (which in this mixture requires very little salt, if any).

Beef-broth is about as nutritious as whey, and no more. But on account of the extractive substances of beef, kreatin and kreatinin, it is more stimulating. The temperature of the body is not raised by it. In gastric irritation, gastritis, and acute dysentery it ought not to be given. Veal-broth is liable to increase diarrhœa, mutton-broth constipation, and is therefore preferable in cases of diarrhœa. A broth of beef, which contains from 1.5 to 2 per cent. of albumin, is made by mixing one part of beef and six of water with a little chloride of sodium and allowing it to stand from ten to twelve hours. Then it is slowly boiled and the whole mass pressed out. Still better is a modification of Liebig's beef-tea, which is obtained by adding one half-pint of water, with six or seven drops of dilute muriatic acid, to a quarter- or one-half of a pound of finely-cut lean beef, stirring it occasionally during two hours, and boiling a few minutes. Beef-juice obtained by pressing out beef after slightly broiling it, contains from six to seven per cent. of albumin. It is slightly acid, and spoils quickly.

The peptonized beef preparations are available both internally and for rectal alimentation. Of the good specimens in the market I have been in the habit of using mostly Leube-Rosenthal's beef solution and Rudisch's (Parke Davis) sarko-peptone. Either may be mixed with hot water or hot broth; a few teaspoonfuls and upwards are valuable additions to the daily food. The former is taken by many undiluted in small quantities; those who object to it because of its strong aromatic



taste and odor, will still relish it when quite cold. Valentine's preparation is weak, but very palatable.

Scraped beef, raw, has been highly recommended in the chronic stage of, and convalescence from, exhausting gastro-enteric catarrh these forty years. It is very digestible, and but for the danger of giving rise to *tænia mediocanellata*, a valuable addition to our means of restoring health. White meats contain less fat, hæmoglobin, and extractive material than beef. Sweetbread (thymus), 22 per cent. of albumin, 6 gelatin, but 0.4 fat, 1.6 salts, and 70 water.

EGG has been utilized as an admixture to milk, or as its substitute, in a great many ways. Both the yolk and the albumin have been so employed. The white of an egg, with a little salt and six ounces of water, well beaten and shaken, is a good mixture, which can take the place of infant food only temporarily, but is an invaluable make-shift in severe intestinal catarrh, or a permanent nutriment in the same, when added to other food.

Falkland skims milk, and transforms it by means of pepsin. The process does not recommend itself to general use by its circumstantiality. Roberts heats milk to nearly a boiling-point, and treats it with liquor pancreatis and bicarbonate of sodium. Fairchild's method of peptonizing milk is generally understood all over the country and is widely appreciated. In this connection I may be permitted again to refer to Dr. J. Rudisch's method of improving cow's milk for the use of children and adults, sick and well, particularly those who suffer from gastric catarrh and do not digest milk in its usual composition. It consists in mixing twenty-five minims (half a teaspoonful) of dilute hydrochloric acid with a pint of water and a quart of milk. When this mixture is boiled but a few moments it keeps well, and is quite palatable and highly digestible.

ALCOHOL has conquered its place among the medicinal foods in the diseases of infancy and childhood. Very little, if any, is required in catarrhal, or the first stages of inflammatory, diseases. It is contraindicated in meningitis, acute cardiac ailments, gastro-enteritis, peritonitis, and acute dysentery. It finds its application in depressed strength and vitality; thus, in the rules for the management of infants during

the hottest days of summer, which the Health Department of the city of New York has published annually these fifteen years, I recommended the administration of a teaspoonful of whiskey daily. It is also required in chronic diseases and slow convalescence.

Its action is stimulant, nutritive, antipyretic, and antiseptic. It is decomposed into carbonic acid and water, and thus saves the waste of material parts of the body. When given in sufficient quantities, it reduces the temperature; the amount required for that purpose is, according to Binz, forty grammes, corresponding with about three ounces of brandy or whiskey. Its most beneficial action is exhibited in sepsis of all forms, mainly also in the septic variety of diphtheria. It is almost impossible to give too much. The doses must be watched so as to be sufficiently large. Whoever is not afraid of giving six ounces of whiskey daily to a child when one or two fail, or ten or twelve when six fail, will soon convince himself of its power for good. It must never be given in concentration; the gastric mucous membrane tolerates no pure brandy or whiskey for any length of time; they must be diluted with either water or milk properly prepared. Wines, brandies, and whiskeys are not equivalent. The latter is obtained pure with greater facility, and at less expense, and besides has, for many, a less disagreeable taste than either of the others, which are often adulterated. The ether contained in wines militates against any antifebrile effect which may be expected from it; the fusel oil with which brandies are too frequently adulterated, acts rather as a paralyzing than a stimulating agent.

(To be continued.)

## ON VENEREAL AND GENITO-URINARY DISEASES OF CHILDREN.

BY F. R. STURGIS, M.D.,

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## I.—GENERAL CONSIDERATIONS OF SYPHILIS IN CHILDREN AND METHODS BY WHICH IT MAY BE ACQUIRED.

INFANTILE syphilis may be divided into two broad groups,—one where the disease is derived from the parents, the other where it is obtained from outside sources. The one is called the hereditary, the other the acquired, form of syphilis. The hereditary form may be again divided into congenital, where the disease manifests itself at or very shortly after birth, and is the early stage of the disease; the other, the late form, which does not manifest itself until some years after birth. It will be seen farther on that an interesting question presents itself for solution whether this late form of syphilis may not delay in making its first appearance for several years without any symptoms having occurred in early life. Upon this question widely-divergent views are held by most excellent authorities. I shall reserve the discussion of this point until later on, and shall first devote myself to a consideration of the inherited variety of the disease, inquiring from which parent the child derived its syphilis,—whether from the father or from the mother only,—and whether it is possible for a syphilitic father or mother to have healthy children,—*i.e.*, children which shall be free from syphilis.

Until the year 1854 it was generally accepted as true that a child could acquire its inherited disease from the father alone without any participation on the part of the mother, when Cullerier read a paper before the Société de Chirurgie of Paris controverting this view, and claiming that in such cases the

mother was diseased, and that the infection was derived from the father only in so far as he conveyed the disease to his wife, and that his influence was not a direct one on the child. In other words, he denied the direct transmission from the father to the child. In his "*Précis Iconographique des Maladies Vénériennes*," published in 1866, he repeats his former belief, and adds that since his first paper he has observed fresh facts which confirm him in his opinion. Among other cases he gives the following:

An officer contracted an indurated chancre, which was followed by a squamous syphilide, mucous patches of the anus, ulcerations of the mouth, impetigo of the scalp, alopecia, and induration of the cervical ganglia. In this condition he married and impregnated his wife, who fortunately escaped infection. A child was born, which, up to the age of eighteen years, never showed any signs of syphilis.

In 1860, M. Notta, and in 1862, M. Charrier, published a series of eighteen cases between them, in thirteen of which the mothers escaped infection, and the children in none of the cases showed any manifestations of the disease. In five of the cases the mothers were infected, and in these the children were all syphilitic. The fathers in all instances were actively syphilitic. In one of Charrier's cases the man had two sets of children, one legitimate, the other illegitimate. He diseased his wife, but not his mistress. The legitimate children were diseased, the bastard was not. Charrier furthermore furnished apparent proof that the bastard was really the child of this man and of no one else.

Mireur, in 1867, gives two cases, one of which is peculiarly interesting and instructive. A man contracted syphilis, impregnated his wife, and had a boy which, up to the age of two years, remained perfectly free from the disease. The father inoculated his boy from a mucous patch on his lip, and the result in the child was an initial lesion, followed by a macular syphilide and anal mucous patches. The wife never showed any symptoms of syphilis.

Oewre, of Christiana, gives the result of fifty-three fathers who are all syphilitic. They have among them ninety-seven children, none of whom show any signs of syphilis.



Other cases could be given, but enough has been said to show that syphilitic fathers may and do beget sound children, and that without infecting their wives; but, on the other hand, there are many cases reported in which syphilitic babies have been born to (syphilitic) women in which the mothers, to all outward appearances, are free from disease. One point should be remembered in this connection, and that is that a person may have syphilis, may recover from its earlier manifestations, and at the time of the examination show no marks or traces of the disease, be apparently in perfect health, and yet break out later on with syphilitic symptoms. In many of the cases in which the mother has been seemingly well, more extended observation has demonstrated that she is really syphilitic, and that her immunity is deceptive. I am, I admit, sceptical about such cases,—*i.e.*, of healthy women and syphilitic babies,—but I should be far from saying absolutely that it cannot be, for the more I see of syphilis, the more I think that with syphilis all things are possible, and yet there is no disease in which error is more likely to occur, nor in which the physician is so apt to be misled. And of all cases the most difficult are those in which the source of the child's disease has to be traced out.

One of the best of the cases reported in defence of the direct influence of the father is that reported by Taylor in the *Archives of Clinical Surgery*, where a man in the early stages of syphilis impregnated his wife, who was healthy and showed no signs of disease. She had first a dead child, and then bore five syphilitic children. During this period the man's disease was active. He was then treated, and, while apparently free from symptoms, impregnated his wife again, and she then had a sound child, which remained so for three years. The man then abandoned treatment, and the wife had another syphilitic child. He resumed his treatment, and became the father of another healthy child, which for a year, at any rate, showed no sign of syphilis.

A pretty case, and well reported; still I doubt, and for these reasons: Keyes, in his work "On the Venereal Diseases," gives a peculiarly nice case bearing upon this point of the apparent sound health of the mother and her immunity

from disease. It is so instructive that I shall quote it in full : "A woman has had, under my observation, three children, all syphilitic. Her husband was and remains syphilitic. The first child was a few months old when I first saw it. It was sent to me for treatment, with the statement that it had been born healthy, had been poisoned by its wet-nurse, and in time had poisoned its father. The child and its father were manifestly syphilitic. The mother thought she was sound, and would have passed for being well, except for a very thorough examination, which detected an occasional suspicious-looking macule upon the skin, and some small but beautifully characteristic mucous patches upon the throat and inside the mouth. All three were treated. The baby died. The mother lost her symptoms at once, and considered herself so well that she refused treatment. The father's symptoms continued, and were severe.

"After a time the wife again became pregnant in another city. A child was born apparently healthy. The mother was a picture of perfect health, and considered herself well. The father was still under treatment. The baby was pronounced healthy by the doctor in attendance, and given to a wet-nurse. The nurse soon got a sore on the nipple, then a sore was found on the baby's mouth, and both the nurse and child commenced to give evidences of the syphilitic poison by eruptions. On this account the nurse was accused of having poisoned the child with syphilis, and was discharged. The child's mouth was treated; another nurse was sought, accepted the place, and after a few weeks the family again came to New York. The mother seemed to be in the perfection of health, and no trace of syphilis existed upon her. The child, now about eight months old, looked like an old man: the head was small, the fontanelle was nearly closed, the body wasted, the voice hoarse, while a large fungating ulcer occupied the corner of the mouth. The father had white patches on the tongue, and squamous serpiginous spots on the scrotum.

"The new nurse was pale; had one raw, hard, beefy-looking ulcer on nipple and breast, about one inch long and half an inch wide. She was feverish; sore throat was commencing, with pains in the bones at night.



"Nurse and baby were put under treatment. The former continued to have a few mild symptoms of syphilis while under observation (six months). The child's symptoms disappeared while under treatment.

"Finally, the mother became pregnant again. She seemed to be perfectly well, but I urged her to take treatment continuously through the term of utero-gestation. This she failed to do efficiently, because she enjoyed seemingly the perfection of health and looked perfectly well. At the end of the eighth month, without cause, the child's movements in the womb ceased. At term, February, 1879, she was delivered of a dead child, the macerated condition of the latter showing that it had been dead for some time. In August, 1879, I saw the mother. She had taken no treatment, but showed no sign of syphilis.

"The case is very instructive. Had I not seen the mother before the death of her first child, I should have felt certain she had no syphilis; for from that date until this writing, now a period of more than three years, she has not shown the least symptom of syphilis, except by the fact that she has produced two syphilitic children."

Grefsberg, in the *Vierteljahrschrift für Dermatologie, etc.*, for 1879, gives a case which is full of interest as bearing upon this point. A woman in 1864 contracted an indurated chancre. In the two following years she had several attacks of secondary symptoms, which necessitated a series of mercurial treatments, and for which she was kept two hundred and ninety-two days in the hospital. In 1867 she married a man who was not syphilitic, and in the space of ten years she had eleven miscarriages. At the twelfth pregnancy, thirteen and one-half years after the initial lesion, she went the full time, and was delivered of a child which presented indubitable signs of syphilis. During this period of eleven years she had not infected her husband, nor had she herself shown any symptoms which could be referred to her old syphilis.

In view of these cases, and did space permit others could be given, the apparently healthy condition of the mother must be held as no proof that she is really free from syphilis notwithstanding, for it is clear that a woman may go for years

seemingly well and yet have been syphilitic. The only way to test that point—i.e., whether the mother is really exempt from the disease—is to inoculate her with the secretion of a syphilitic lesion capable of conveying the disease. This has been done by Caspary, who gives the case in the *Vierteljahrsschrift für Dermatologie*, etc., for 1875, under the caption of "Upon the Healthy Mothers of Syphilitic Children." He answers the question in the negative, on the ground that while seemingly healthy they are really the subjects of latent syphilis. He then proceeds to give the following case: A married man acquired syphilis in 1872. During the period of his acute symptoms he abstained from sexual intercourse with his wife, but upon their subsidence he resumed coitus. The woman never showed any outward manifestations of syphilis, and was never treated for this disease. In October, 1874, she became pregnant (she had already borne several children before, the condition of whom is not mentioned), and about three months later had recurrent uterine hemorrhages. Early in March, 1875, she was examined, and at the fornix vaginæ a small, hard, circumscribed body was found. Caspary does not explain what this body was. A few weeks later the woman aborted. Examination of the foetus showed a gummous infiltration of the maternal portion of the placenta. The woman recovered from the childbed without any bad symptoms or evidences of syphilis. Caspary, in order to satisfy himself if the woman was affected with latent syphilis, persuaded her to be inoculated with the secretion of an active syphilitic lesion. This was accordingly done in four places with the secretion of mucous patches mixed with blood, which was taken from a man who was suffering with the eruptive stage of early syphilis and who had received no treatment. The result was negative, and after waiting for six weeks the woman was put upon treatment, on the ground that the failure to be inoculated showed her to be suffering from a latent syphilis.

Here are, then, three cases in which women appear to be entirely free from syphilis so far as any outward manifestations go. One of these is known from past acquaintance of her to have been syphilitic, but in a very mild way, and had any other physician but Dr. Keyes seen her for the first time it

would have been said that she had never had the disease. The second is known to have had an early syphilis, but she apparently is exempt from any symptoms for the space of eleven years. She marries a healthy man, one who says he has never had syphilis, and, so far as appearances go, there is nothing to disprove his statement. The woman has eleven abortions and one syphilitic child born at full term. But for her earlier known history she also would pass as one of those instances of a healthy mother giving birth to syphilitic children. The third shows nothing tangible which can be referred to syphilis, under careful watching, unless the hard lump at the fornix is considered as an initial lesion, and seemingly without secondary symptoms, and she also has a syphilitic abortion. Now, with our present knowledge of the disease, a person who is not protected by a previous attack is certain to acquire syphilis, provided all the conditions favorable for its reception are present. Here they are artificially produced by inoculation and the result is negative.

Is it not fair, therefore, to assume that a healthy mother cannot give birth to syphilitic children notwithstanding the fact that she shows no symptoms, past or present, of the disease, and that her freedom is really deceptive? Nor is she capable of contracting the disease even when she is inoculated with it, as is the case in Caspary's patient. And this would agree perfectly with the famous law of Colles, which has been lately brought into question by Behrend and others. Colles, in his work, "*Practical Observations on the Venereal Disease*," etc., writes: "One fact well deserving our attention is this: that a child born of a mother who is without any obvious venereal symptoms, and which, without being exposed to any infection subsequent to its birth, shows this disease when a few weeks old, this child will infect the most healthy nurse, whether she suckle it or merely handle or dress it; and yet this child is never known to infect its own mother, even though she suckle it while it has venereal ulcers of the lips and tongue."

Behrend, in the *Annales de Dermatologie*, etc., for 1883, objected to the interpretation of this law of Colles's as being applicable to those cases in which the mother was free from



syphilis, claiming that it is only in those cases where the mother conveys the disease to the child that she is not infected by it; but, in my opinion, Behrend does not understand Colles's statement aright. In the passage just quoted Colles expressly states "that a child born of a mother who is without any obvious venereal symptoms," etc. The very point under discussion is whether the woman is really healthy merely because she "is without any obvious venereal symptoms;" the one side claiming that she is really diseased and that her good health is deceptive, the other claiming that on the principle of *de non apparentibus et non existentibus eadem est ratio* she is free from syphilis.

Up to within a few years this law has been universally accepted, but now come reports of cases where this seems to be controverted, and it is claimed that a syphilitic baby can infect its mother. Guibout's case is too defective in its details to be of service. The second case is one quoted by Behrend (*Berliner Klinische Wochenschrift*), from the "Tageblatt der 51 Versammlung der Deutschen Naturforscher und Aerzte in Cassel, 1878," p. 94, and is as follows: A man, thirty years of age, was infected eleven years before his marriage, and for nine years previously had been entirely free from any symptoms. Three years before the history was recorded he married, and in the first year of married life his wife, presumably free from syphilis, gave birth to a syphilitic child, which was cured by the repeated use of calomel. (The child's symptoms are not given.) The second child was born at the second year of marriage, and at the end of the second week broke out with a macular syphilide and with syphilitic ulcerations of the mouth. While the mother was suckling this child an "exquisit" hard chancre appeared upon her left nipple, followed by a "roseola," which were cured by inunctions of mercurial ointment. Neither the husband nor the first child had shown any syphilitic manifestations since their original attacks. The milk had not been drawn off by a third person.

This is certainly an extraordinary case, extraordinary in a twofold sense: first, as being unique in its circumstantiality; and, second, as being totally opposed to our knowledge of what occurs in such cases. It is the only seemingly well-

attested case of the kind, and if we are inclined to accept it as a fact, it must outweigh all the negative testimony which we at present possess. But one fact does not prove a point, when it is diametrically opposed to many facts on the other side, even though those facts may be only based upon circumstantial proofs. All that we can say is that it is an extraordinary case, and causes us to suspend judgment until it is supported by other instances equally good or better.

So far, we have seen that a syphilitic child cannot infect its mother, notwithstanding that the mother seems to be entirely free from the disease; and now the converse comes up for consideration, Can a syphilitic mother infect her child extra-utero when the mother is confessedly syphilitic at the time of the child's birth? Upon the solution of that point depends the question whether a woman who is infected during her pregnancy, after conception has taken place, can give birth to a healthy child, and as these two points are intimately connected I shall consider them together.

It is generally admitted that if a woman is infected with syphilis during the first half of her pregnancy she will give birth to a syphilitic child, but it is not so generally admitted that if she become diseased during the second half the child will suffer, and the nearer to the full term the infection is contracted the safer will the child be. But, unfortunately for that view, well-attested cases have been reported in which the mother has contracted syphilis up to the eighth month of her pregnancy without immunity to her child resulting. Vajda, in the *Wiener Medicinische Wochenschrift*, 1880, gives a case of a man who was infected between the fourth and fifth month of his wife's pregnancy, and who, notwithstanding repeated warnings of the danger, infected his wife during the seventh month of her pregnancy. Up to that time the woman, repeatedly examined, had never shown any signs of syphilis. Five weeks later, in the eighth month of pregnancy, she developed an indurated chancre with inguinal adenitis; subsequent symptoms followed, and at full term she was delivered of a child, which at the age of seven weeks showed papules, and, later on, ozæna, psoriasis, and pustules.

M. Zeissl, in the *Wiener Medicinische Presse*, 1884, gives a

case in which the woman was impregnated by her husband somewhere between the 5th and the 10th of April, 1883. On the 12th April the husband was infected with syphilis, and had a sore upon his penis, which healed up rapidly and left an induration behind. Believing himself safe, he had coitus repeatedly. In June he had a macular syphilide, with other symptoms. The woman was examined in the middle of July, 1883, and found free from any symptoms of syphilis. On October 4 she complained of cephalalgia and had a mastoid and inguinal adenitis, but nothing else. On October 28 she showed a well-marked macular syphilide. On the 31st December the child was born. Eight days after birth the child exhibited a plantar and palmar eruption, with mucous patches of the lips and mouth, and on the 15th January, 1884, a pemphigus. In five weeks the child died.

In this case the infection probably occurred between the fifth and sixth months of pregnancy. Chabaliér gives a case where infection of the woman occurred in the seventh month, with a syphilitic child as the result.

Neumann, in the *Wiener Medicinische Presse* for 1885, gives the statistics of one hundred and twenty cases of syphilitic women, among whom twenty were infected *post-conceptionem*. Of these twenty women, five had syphilitic and fifteen had non-syphilitic children. The mothers of these five children were infected as follows: one in the third month, two in the fourth month, one in the seventh, one in the eighth month. Of the fifteen children who were born free from manifestations of syphilis, seven died at periods ranging from twenty days to six weeks, but without showing any positive signs of syphilis. Four lived, and in four cases no data are given.

Taking the mothers of the eleven children about whom information is furnished, one was infected in the first month, one in the third month, three were infected in the fourth month, one was infected in the fifth month, two were infected in the sixth month, one was infected in the seventh month, one in the eighth month.\*

One striking point in these statistics is the fact that of the

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\* In the *Wiener Med. Jahrb.* for 1885 this latter number is given as two. Probably the latter is the correct number.



fifteen children who are recorded as being free from syphilis, seven die very shortly after birth, the latest at six weeks, and in four no data are furnished, so that really only four children in fifteen are known to have lived. It is possible that these children died before symptoms had time to develop themselves, and the following case, reported in the same paper by Neumann, is very suggestive:

When this woman was impregnated the husband was clear of syphilis. He subsequently contracted the disease, and gave it to his wife in the eighth month of her pregnancy. The child was born on July 9, 1882, and until it was seven months old it showed no signs of syphilis. At that time, February, 1883, a sclerosis of the navel with subsequent symptoms made their appearance, which lasted up to June 20, 1883. There were then present in the right genito-crural fold, and on the chin, reddish-brown pigmentations. The child's health was good, the voice was strong, and there were no snuffles. Taking these points into consideration, it is open to doubt whether a woman who is confessedly syphilitic can give birth to healthy children, and it is not safe to predicate the immunity of the child upon the fact that it shows no symptoms during the first six months of extra-uterine life, because, although the symptoms do generally manifest themselves within that time, a large proportion do not appear until later, the rapidity with which the outbreak will occur depending upon the degree of severity of the mother's disease. If she have active manifestations at the time of the child's birth, the probabilities are that the child will be born with the evidences of the disease upon it, or that they will appear very shortly after birth, while if the maternal disease is very light, or if it be wanting, the child's symptoms will not occur before the seventh or eighth month, or even later, of extra-uterine life. Of course, if any undoubted case occur where a child born of a syphilitic woman is after birth infected by the mother, and exhibit the signs of an acquired syphilis,—i.e., an initial lesion followed by syphilides of the skin or mucous membranes,—it would settle the point at issue. No clear case of the kind has been as yet reported, although one such has been claimed by Arning in the *Vierteljahrschrift für Dermatologie* for 1883.

A woman was infected with syphilis by her husband in the fourth month of her pregnancy. She was treated for light secondary symptoms during the time of carrying the child, and at full term was delivered of a stout, healthy, well-developed child. Two children had been born to this woman previous to her contracting her disease; the first one was living and healthy, the second died during birth from strangulation of the cord. The child was born on the 25th October, 1881. The woman suckled her child with both breasts at first, but afterwards entirely on the right breast, as the left one was affected with fissures. Four weeks later the woman noticed on the left angle of the mouth a moist patch, which, at first stationary, extended to the upper lip, and then began suddenly to destroy the lip. In due course of time an eruption appeared over the body, and the child was brought to the polyclinic. It was a well-nourished, healthy-looking child, except for its face, which had been changed in a most remarkable way. Almost the entire upper lip had disappeared, only a small piece remaining at the corner of the right side. That portion which was left was thickened and infiltrated; the surface of the sore was almost dry and free from pus, such as is found in the initial lesion. The submaxillary glands were very markedly swollen, and the glands of the rest of the body were also swollen, but in a much less degree. On the body was an extensive medium-sized papular syphilide, especially pronounced on the head and scalp. Nothing on the hands and feet, but about the anus and vulva were moist papules. A month later a periostitis of the index finger of the left hand developed, and five weeks later the child died.

On autopsy, nothing characteristic of hereditary syphilis was discovered.

On reading this report over carefully, I do not share the view of Arning in considering this case as one of acquired syphilis. The moist patch was not an initial lesion, but a mucous patch, and the fact that the glands under the jaw were more swollen than elsewhere would not be of any more significance than indicating that they had been irritated into an active condition by the inflammatory process going on in the ulcerating mucous patch of the lip. Apparently the eruption



came on at about the same time as the ulceration began, although no very positive statement is made as to the time of its appearance, an occurrence which would not be the case were the lesion from an acquired source, as the law of incubation holds as good with children as it does with the adult.

This is the only case with which I am acquainted in the literature of this subject, and it certainly is not sufficiently convincing to enable me to say that this point can be granted; hence we must say that no sufficiently good evidence has yet been adduced to show that a syphilitic woman can infect her child extra-utero.

A theory which has been invoked to account for the syphilis of the mother is the one known as the *choc de retour* of Ricord, where the child is first supposed to have been infected by the father and then conveys the disease to the mother, but as this really belongs to the domain of infection of adults and not of children, it need not be discussed here.

Syphilis may, however, be given to infants and children by the direct manner; in other words, they may acquire the disease by direct infection, extra-utero, from a person who has contagious symptoms, or it may be done artificially by vaccination or circumcision. Cases are abundantly scattered throughout medical literature of children becoming infected by nurses who were the subjects of syphilis by suckling them. Luzinsky, in the *Allgemeine Wiener Medicinische Zeitung* for 1884, gives several cases where syphilitic nurses infected children who were perfectly free from the disease, and the children in turn infected their mothers. In one of these cases the mother gave birth to a child, of course syphilitic, and this child infected the nurse who suckled it. This subject of the inoculability of certain syphilitic symptoms in children I propose discussing in another paper.

Some years ago I had the opportunity of seeing a very interesting case of acquired syphilis in a young boy, three or four years of age, and the conveyal of the disease to his little sister two years older than himself. The case was sent to me for an opinion as to an eruption which this boy had, and which was an undoubted macular syphilide. He had been under medical care for an erosion seated at the outer angle of his left

eye, the nature of which was not clearly understood. It was still present when I saw the boy, and I was enabled to diagnose an initial lesion with preauricular adenitis. So far as I was able by examination and questioning I could find no evidences of disease in the father, mother, nor any member of the family; not that I suspected hereditary trouble, but I thought it possible that the boy might have acquired his disease from mucous patches of the lip of father or mother, similar to what took place in one of Mireur's cases, where the father infected his child in this manner. But my search was of no avail. At any rate, there was the disease, and the mother was warned not to kiss the child herself nor to allow his sister nor any of his playmates to do so. My warning was unheeded, and a short time afterwards his little sister was brought to me with a beautiful initial lesion of the cheek, conveyed, as I believe, from the boy. She also had subsequent symptoms on the skin and mucous membrane of the mouth and throat. Both children did well under treatment. An interesting question has often occurred to me in the case of the girl: if she, having recovered from active manifestations of her disease, were to have children subsequently, would they be likely to have syphilis, and if so, would it not be considered as one of those cases where the inheritance came through the father, and where the mother was healthy? The objection might be made that many years would elapse before the child would be nubile, and by that time the disease would have been cured. But in answer to that I refer to Grefsberg's case, where thirteen years of freedom elapsed and yet a syphilitic child was born. In thirteen years the child would be *facile apta viro*, and such an occurrence as syphilitic children would by no means be among the impossibilities.

Lydston, of Chicago, reports a family history of syphilis conveyed in the same way by a syphilitic child to various members of its family; but as that refers more especially to the contagiousness of symptoms in the infant, I shall reserve the report of this case until another paper.

Milbank, in the ARCHIVES OF PEDIATRICS, gives the report of a case of supposed acquired syphilis in a child as the consequence of an attempt at rape; but as the condition of the

parents of the child nor of the person who committed the assault is not given, and as no initial lesion was positively found, only a vaginitis, the case loses value as proof of this point.

Before the days of bovine vaccination, when the inoculation was made from arm to arm, the possibility of conveying syphilis was much greater than it is at present, but even now, from carelessness, the disease may be given by this method.

Taylor, in the *Archives of Dermatology* for 1876, gives an interesting case of syphilitic infection in a child, nine months old, resulting from vaccination. The symptoms in the child were a macular syphilide over the body, a few mucous patches about the anus, and adenitis universalis. On the right arm, at the point of vaccination, "a large, raw, elevated induration was seated, of an oval shape, nearly an inch long by half an inch wide; . . . its surface was flat, without granulations, having a tendency to bleed, in fact looking raw, and being elevated about a quarter of a line above the normal plane of the integument. The axillary glands were enlarged and hard." . . . Upon careful inquiry and examination, the parents were excluded as being the cause of the child's disease, as was evident from the appearance of the initial lesion.

On searching for the cause of the child's syphilis, the possibility of infection by feeding or suckling being excluded, it was clearly shown that it was derived from vaccination, and I cannot describe it better than by quoting the doctor's words: "Early in November it was ordered that a number of the inmates of the Penitentiary should be vaccinated; among them were the infant Edward and his mother. The records show that the operation was done on the 7th November, and about twenty persons were vaccinated. I will briefly give the circumstances as I obtained them, stating that I took care to eliminate all error, and that the facts as given are true in every particular. The vaccination was done by a physician who used an ordinary toothed scarificator. The vaccine was in quill form, and furnished by the Board of Health. The physician vaccinated about twenty in succession, using the same instrument, and having performed the operation on one, applied it without delay to the arm of the next patient. It was



clearly proved that he did not wipe or in other ways cleanse his instrument, but having used it on one, applied it without delay on the arm of the next. . . . The child, Edward, was vaccinated immediately after a young woman, a prostitute, had been vaccinated, and before her about six adults had been similarly treated. I may here say that the mother and nurse both observed that the instrument was taken directly from the arm of this young woman and applied to that of the child. . . . I have since learned that the young prostitute who was vaccinated immediately before the young child, Edward, was in the secondary period of syphilis, she having within six months of the date of vaccination had general syphilitic manifestations, such as papular syphilides, mucous patches, angina, and pains at night. She had had slight treatment at the time of the existence of these lesions, but none within four months of the date above mentioned. In view of this condition of the woman's system, there can be no doubt of the contagious nature of her blood, as she was virtually a woman in whom syphilis in an active form existed, not having been properly treated."

Here is a clear case, and well reported, showing that vaccination is sometimes the means of conveying syphilis, but, on the other hand, many cases of vaccination occur where the lymph is taken from syphilitic subjects without conveying syphilis. How does this happen? Because the lymph taken under those circumstances is unmixed with the blood or with the secretions of syphilitic lesions, such as mucous patches or the initial lesion. Provided these precautions are taken no danger ensues, as is very nicely exemplified in a note contributed by Dr. Charles Rosewater, of Omaha, Nebraska, to the *Medical Record* of 1886. Furth, of Vienna, vaccinated a number of children from the arm of a child which at the time was perfectly healthy, but which later on developed a syphilitic eruption. The children vaccinated from this source were hunted up, kept under inspection for some time, but in none of them did any symptoms of syphilis break out. Of course it is much safer to adopt the plan in general use in this country,—viz., to inoculate direct from the calf; but even that is not sure, as is shown in Taylor's case. Hence it is better to discard scarificators and lancets, which are nine times in ten



liable to be soiled, and to do the scarification with a pin, which can be thrown away, and in that way reduce the chances of the conveyal of syphilis to a minimum.

Another way in which syphilis may be conveyed to infants is by the rite of circumcision, and several cases of such have been reported. I have seen two, and Taylor (*New York Medical Journal* for 1873) has reported four other cases. Ricord stated ("Lettres sur la Syphilis") that syphilis was frequently conveyed in this way to boys by disease in the mouths of the operators, among whom it was the custom to stanch the blood by suction of the part,—a practice which he prides himself as doing much to stop among the Israelites of Paris. This method, I believe, is now abandoned, and the chances of infection are therefore materially diminished.

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(To be continued.)

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## ON HYDROCEPHALUS.

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WHAT is hydrocephalus? Water on the brain is so common a fright among mothers in the out-patient room, that I venture to infer that the term is used somewhat loosely among medical practitioners and might bear a few minutes of reflection. Now I can imagine some reflective parent answering my question, "What is water on the brain?" in this wise: "It is the consumption of the bowels of the head." And in one sense she would be very near the truth, for "consumption of the bowels" stands for every conceivable disease in the abdomen—save, perhaps, "cutting the teeth in the loins," which I have not fathomed yet, and will not, therefore, insist upon the distinction between the two diseases. Consumption of the bowels *ought*, of course, to be equivalent to tabes mesenterica. But tabes is hard to diagnose in its early stages, and so it comes that wherever a child is ailing for some time, and wasting, and nothing definite can be detected, the doctor's

abdominal shelter is invoked, the disease is labelled, and his mind is at rest. The mother following after, with her very shaded light, means what the doctor means, and as he does not know himself, *her* ideal is a very airy one indeed, though the *reality* condenses, perhaps, after all, into so mundane a thing as green apples. Now, water on the brain occupies a very similar position. Very few of us, I think, have formulated any definite ideas about hydrocephalus. It is the doctor's *head shelter* when he cannot make a diagnosis, and water on the brain means anything, from acute or chronic brain-disease to the convulsions of rickets or teeth, the onset of an exanthem, or one of the many gastro-intestinal derangements of children, which are met by the score. The books do not help us in any way, for after poring through *acute hydrocephalus*, which we are told means tubercular meningitis, perhaps we come next upon some brain-disease which is acute and is hydrocephalus, but which is not acute hydrocephalus or tubercular meningitis, and to make matters worse we are told to distinguish the true hydrocephalus from false hydrocephalus, which is not water on the brain at all, and never ought to have been called so.

Let us try and make matters a little more definite, each to his own mind.

The structures to be dealt with are, from without inward, a soft and probably still unclosed skull; a serous membrane of the serous membranes, if I may so speak, meaning by that a membrane in which the apparatus for rapid exudation is developed to the highest degree; and a viscus of unusual softness or delicacy.

Now, exudation is in great measure a question of blood-pressure, and the kidney affords for the present purpose an apt illustration of this. When a calculus is dislodged from the renal pelvis and completely blocks the ureter, we usually think of the subsequent pathological process as one of still continuous secretion, gradual dilatation of the pelvis of the kidney and hydronephrosis. But this is not by any means the only possibility. I doubt if it be the usual result. A certain amount of dilatation will take place, perhaps, but not usually an *excessive* amount, before the organ strikes work and shrivels.

If the ureter be obstructed low down, or incompletely high up, then it is that we meet with hydronephrosis, or distention of the kidney into a large sac. From this I think may be gathered, what can be shown experimentally from other sources, that the activity of secretion is regulated by blood-pressure. If the ureter is blocked high up, *altogether*, then the blood-pressure is quickly neutralized by the pressure of the secreted urine, and work comes to a complete stand-still. If the passages be only partially obstructed, or obstructed at such a part as will allow of *easy distensibility*, then the probable result is hydronephrosis,—because, as I understand it, the blood-pressure is not equalized. By the time that it is *nearly* so, then the cyst has become tense and leaks,—the obstruction being only partial,—the diminished tension on the one side invites a flux on the other till the cyst refills, when again it partially empties, and so on indefinitely, with the only result that the cyst continues to distend under the persistent but slow pressure, and the hydronephrosis continues to increase. This is the history of many a case of hydronephrosis, and one of the symptoms of the disease is the passage of a large quantity of limpid urine, concurrently with the diminishing abdominal tumor. But what about the contents of these cysts, and the urine passed on such occasions as I have alluded to? Its characteristics are significant, the fluid is of specific gravity hardly exceeding water, 1002, 1004, or 1005, often no more than 1002. What the intimate nature of the process may be which leads to the diminution of the specific gravity of the urine—whether it be physical entirely or vital in part—I cannot now stop to inquire, but of the fact there can be no doubt, and it is of practical importance in the diagnosis and treatment of these cysts, and if I may diverge for a moment, I would say that it is important in reference to the whole subject of renal disease and renal health, suggesting as it does some of the conditions under which secretion is carried on, and of a not uncommon hindrance to its due performance. For supposing that the urine is obstructed in its outflow—by stricture, for example, or some uterine tumor. Does not this hydronephrotic urine teach that obstruction of any kind will tend to reduce the specific gravity of the urine from 1020 to 1010 or 1005? and then we have a

cause of blood- and tissue-degeneration and of Bright's disease opening before us which for the most part receives but little attention.

But the illustration is suggestive also as regards the cerebro-spinal fluid. Why is its specific gravity so low? May we not gather from the hydronephrotic kidney that it is secreted with the pressure in and outside the vessels nearly in equilibrium?

If so, then dropsy of the ventricles and subarachnoid space would be the result of a destruction of this equilibrium by increased pressure inside the vessels; and consequently would only be found in very exceptional cases, and to a most moderate extent, after the age of early childhood; and for this reason, that the subarachnoid space is very limited after all, and supposing that the blood-pressure rises, the cerebro-spinal fluid will presumably increase pain-pressure, and, like the ball-valve of a cistern, will shut its own tap. The facts of the case are often put in a way contradictory to this,—the blood is said to increase in the brain and the cerebro-spinal fluid to decrease in accordance, but it is displaced rather than decreased. Fulness of the vessels is no favoring condition for absorption, and I believe that there is a moderate increase of fluid under circumstances of increased pressure, and if so, the fluid ought to vary somewhat in its specific gravity, as indeed it probably does, with the rise and fall of the tide; but information on these matters is very meagre.

But what is the practical outcome of all this? Let me answer this question by another. When we see a child with a too bulging anterior fontanelle, and distended veins perhaps coursing over its forehead and scalp, do we not involuntarily think of hydrocephalus? That picture comes to the mind of the conditions inside the skull. That there is excess of cerebro-spinal fluid within and a threatening *hydrocephalus* certainly seems to me to be the orthodox thought. But is it so? Is the brain a sort of buffer between the opposing forces within and without it? Is there this risk of sudden effusion? I wish to contend that there is no evidence whatever of any material excess of fluid within the skull in such a case; and that taking all such cases round, it is more probable than not



that no excess of fluid exists, but that the intra-cranial vessels are congested and the volume of the brain swollen.

From what I have said as regards blood-pressure and the exudation of fluids, a subject upon which I wish I had time to enter more thoroughly, as many illustrative facts and suggestions may be derived from the study of the pathology of dropsies of the joints, of the tunica vaginalis, of the peritoneum, indeed, of all the serous sacs, I can conceive that before the brain has fully grown and developed, while paroxysmal fury is its motto, whether for growth, development, or functional exercise, and before the organ is sufficiently supported by the consolidated skull, in the manner which is so essential for an organ of so soft a consistence as the brain, I can conceive, I say, the balance between the pressure upon the surface of the brain and ventricle and that within the vessels being suddenly disturbed and thus an acute hydrocephalus. Possibly I may be wrong in depreciating the importance of such a condition. But all I know is that while considerations such as I have given would make me cautious in concluding that it could be a disease of any frequency, morbid anatomy makes one equally chary.

I am not going to say that perhaps, in many cases, an ounce or two of fluid in excess may not be present. What I do assert is, that the conditions are far more often and essentially those of inflammation, swelling, or œdema, turgid softening, and so on. And the fluid if in excess at all is a *result*, I was going to say an *insignificant* result, and not a *cause*. This is not an unimportant distinction. To put hydrocephalus upon the *pedestal* is to ask attention to a *symptom*, whereas in no condition is it more important to look to the *cause*. In many cases of so-called hydrocephalus the disease is perfectly and quickly remediable, if you look at it in this light.

I see many cases of convulsions in infants where the anterior fontanelle bulges; the other fontanelles and sutures are wide open, with a warning cry, all things, in fact, to indicate, if we look at matters from the one point of view, acute effusion of fluid and its correspondingly grave outlook. But in which, perhaps, a tooth comes through, perhaps food has some obvious relation to the production of the convulsion; most likely there is some evidence of rickets, and where the timely ad-

ministration of bromide of potassium and chloral, singly or combined, arrests the convulsion, sends the child to sleep, and the evidences of effusions at once subside. From evidences such as this it seems to me quite legitimate to talk of the swollen brain, which is a consequence of convulsions, as well as of the effusions which cause it.

Thus I should like to simplify matters. All I know of hydrocephalus concerns *chronic* hydrocephalus alone, a disease that only adds to the confusion if the usual distinctions of acute and chronic be accepted, because there is a tendency to consider the two as related. But the diseases are perfectly intelligible if we consider them, as they are, to be totally distinct.

Whatever doubts we may have about acute effusion of fluid, there are none about the chronic form, or, as I shall call it now, *hydrocephalus*, for I recognize neither. Specimens that show the morbid conditions for the most part show but a moderate degree of the disease, for the simple reason that in extreme cases the brain becomes so expanded by the accumulated fluid that it is very difficult indeed to remove it without wrecking it; and should this be accomplished, it is too delicate to harden well, or too large to put into a bottle, for any one who holds a due balance between utility and prodigality. Still, the points which it appears to be necessary to dwell upon are usually demonstrable. From above the lateral ventricles are usually seen to be equably dilated, and on lateral section the third and fourth ventricles and the iter are similarly affected. In the fresh brain the dilatation of the third ventricle, as seen from the base, produces rather peculiar appearances, which it may be as well to call attention to. Its floor bulges downward considerably, and forms a pellucid-looking cyst, upon which are perched the corpora albicantia behind, and in front there are the dilated infundibulum, and I have seen the sheaths of the optic nerves so œdematous as to appear at first sight as ampulla-like protuberances from the same cavity. These appearances are a little puzzling if we are not prepared for them, and they are of very practical import in that they would readily account for the atrophy of the optic disk, or other intraocular changes (white atrophy particularly) which are occasionally discovered by the ophthalmoscope.

The only other appearance that now occurs to me to point out as all-important is the condition of the fourth ventricle. I call attention to it because I have myself found it instructive at the bedside. We talk of hydrocephalus *vaguely*, and when such cases die, suggest sudden effusion at the base of the brain. But if we look at specimens, surely vagueness will give place to a well-defined conception of the conditions of tenure of such a life and of the cause of sudden death.

The healthy fourth ventricle, you know it well, is a mere slit, but here in the diseased one the dilatation has grown to great size; and dilatation so great as this must mean a flattened out and compressed medulla, which inevitably entails certain consequences. Such a state of things cannot exist without subjecting the medulla and its nuclei to pressure. The circulation in the vessels of the bulb will be reduced to the feeblest of currents,—and what workman will work well when you reduce his wages? he is much more likely to strike.

Let me give you two parallel instances which I have seen and which I often allude to, they interested me so much at the time: A young woman was suddenly seized with symptoms of meningitis, and as we watched her day by day, the optic disks gradually became more inflamed until she became blind, but she gradually recovered from the meningitis, and as she did so the optic disks assumed the appearance of white atrophy, the blood-vessels being extremely small. Since then she has gradually recovered a certain amount of sight, but she tells me that this is only so as long as she is under no excitement. If flurried in any way she becomes blind. One cannot but suppose that the minute vessels which replace the healthy supply, strangled as they are by fibrous tissue, are sufficient for times of peace; but under the excitement and turgescence of excessive function of the brain they are incapable of adjusting themselves to the augmented requirements, and a block comes at the door. It is the old tale, in fact, of the cry of fire in a full theatre: a quiet stream would see all the occupants *safe outside*, yet most of them are burnt *within*. The other illustration is not very different. It was a case of idiopathic anæmia, who during the course of his ailment went completely blind for some hours without any coincident oph-



thalmoscopic change, and then recovered sight. The explanation seems to me to be that the optic disk circulation, thus in difficulties, fails suddenly under excitement; and further, when it is excessively *feeble* the nerve-function is liable to collapse suddenly, and to the *uninitiated* without warning. I think such cases are instructive when we come to deal with the functions of the medulla under the difficulties created by hydrocephalic dilatation of the fourth ventricle. The stream which keeps life going is excessively feeble, and, worse still, is incapable of amplifying itself under pressure from behind. Some trivial excitement comes, no matter what. The general circulation quickens up to the emergency, but the medulla is not only unequal to the demand, but the increased traffic creates a block; the circulation comes temporarily to a stand-still, and the patient may be dead in an instant. We can therefore understand that the life of the hydrocephalic is a most precarious one for a long time, perhaps, and it is remarkable how long such cases will live; he gets on somehow; perhaps he may be fairly intelligent, most probably dull; perhaps with no more than an occasional flash; but in the end intelligence fails more or less completely; sight fails, and the child lies in bed without taking notice of anything or anybody, taking its food when fed, and sleeping. Death comes sometimes by convulsions; more commonly suddenly or by progressive emaciation; deepening unconsciousness, even to failure of respiration; accumulation of mucus in the tubes and choking; or to failure of deglutition; food entering the air-passages and so a broncho-pneumonia.

Now the causes of this disease are few, and though the disease is one which has been much discussed, one well understood, and seems to me to present very little difficulty, I will place them in what is perhaps their commoner order of occurrence. They are:

- (1) Cerebellar tumors (including tentorium and pons).
- (2) Chronic inflammation and adhesions at the base of the brain between the medulla and cerebellum.
- (3) Congenital malformations.

These no doubt act in one of two ways: there may be pressure upon the veins of Galen and the straight sinus, or



there may be closure of the communication between the interior of the ventricles and the rest of the subarachnoid space. It might be thought that the pressure upon the veins and the obstacle thus produced to the return of blood from the choroid plexuses would be a sufficient and readier explanation of *all* cases; but it seems clear from the occasional occurrence of congenital malformations or of post-congenital adhesion and blocking of the aqueduct of Sylvius, that the mere closure of the ventricles is sufficient for the production of the affection. The congenital malformation is rare. Dr. Taylor has had one such case, the Sylvian aqueduct being obliterated, and it does not appear at first sight quite clear that the mere closure of the communication between the ventricles and the extra-ventricular subarachnoid space should so alter the conditions of the blood-pressure that its equilibrium is destroyed and hydrocephalus results. But it can be shown, I think, that this result is probable. It seems true that by the conversion of the ventricles into a closed cyst the ball-tap action of the cerebro-spinal fluid is in great measure rendered inoperative.

Increased blood-pressure towards *closed* cavities leads to exudation, and exudation which is unable to escape to other parts, and thus equalize the pressure, leads to progressive dilatation of the cavity in which the fluid lies. Supposing that the cavity is enclosed by unyielding confines, the tendency to exudation is soon neutralized by the pressure within the sac, and the cyst ceases to increase; but in such a case as the brain at the time of life at which hydrocephalus occurs the bones are soft, often ununited, and the brain-substance is not of a consistence to resist the conditions which, wherever they exist, appear to be favorable to the collection of fluid, and are especially so in the brain, from the anatomical arrangement of the ventricular plexuses. Thus it seems to me probable that in congenital closure of the iter, or in the closed sac thus formed by inflammation about the medulla, and the blood-pressure, is seldom neutralized, and thus hydrocephalus is a too probable consequence.

Some would get over the difficulty readily in another way. They think the condition is all inflammatory, and, being so, they find no difficulty in explaining the dropsy of the ventri-

cles, because they can point to the pleura, peritoneum, synovial sacs, indeed, all the serous and synovial membranes, and say inflammation causes dropsy of the sacs habitually, and it does so in the brain. And there are occasional cases in which the lining membrane of the ventricles is undoubtedly diseased. But they are exceptional cases, I think. So far as I have seen—though nobody can have a very extensive experience in actual post-mortem examinations upon such cases—the more common condition is one of simple dilatation of the cavity without demonstrable change in the lining membrane. After the cranial bones have consolidated, hydrocephalus, unless it be a remnant from an earlier age, is very rare. The lateral ventricles may often be judged to be moderately dilated, and the fluid in excess; but that, I take it, is an excess which shows more the extremes of accommodation than actual disease. I do not suppose that this is so, because the firm external support of the skull keeps the fluid within bounds, and I would also say that while the physical conditions do not allow of the formation of hydrocephalus in adults, neither do what we may call the vital conditions. Excessive tension inside the skull is a much more serious thing as regards risks in the immediate distance than it is to a child. It probably means much more intense headache, much more intellectual disturbance, more rapid wasting, and so on, and it is probable that no such complete abeyance of all the intellectual faculties is possible in an adult for so long a period as is certainly possible, nay, certain, in a young child.

If I may now sum up the points of my paper hitherto, they are these: that many every-day occurrences of practice are called hydrocephalus which are not so, and for purposes of discussion this may be taken to include, for time is wanting for specific allusion to the subject, that hydrocephalus and rickets are not often associated, as is very commonly asserted; that hydrocephalus is an infrequent occurrence, due to one of two or three conditions of advanced and irremediable structural change.

This leads me to the last point, viz., treatment, and I am sorry to have to say that with the views that are expressed the only treatments possible are the old-fashioned ones of firm strap-

ping, the rubbing in of mercurials in such cases as may seem to be of inflammatory origin, and tapping. Believing as I do that the consolidation of the bones is a bar to the occurrence of hydrocephalus, I doubt if systematic support, recommended by Gölis, Trousseau, West, and others, has often been carried out with sufficient patience, and I am inclined to believe that in suitable cases paracentesis is deserving of a wider range of practice than it has received. None of these things can, in the nature of the case, show a large percentage of successes. But this is not the only occasion on which it happens that "if by *any* means I can save *some*" must be our guiding principle and aim.

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## CLINICAL NOTES FROM HOSPITAL AND DISPENSARY PRACTICE.

BY L. EMMETT HOLT, A.M., M.D.,

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*An unusual case of hereditary syphilis of the viscera; liver and spleen forming large abdominal tumors; great improvement under specific treatment.*—M. R., female, nineteen months old, was brought to the dispensary November 13, for a swelling of the abdomen, which had been observed for two months. It has been pronounced malignant disease by some physicians outside who had seen the case.

The following facts were obtained regarding the child's previous history:

No eruption or snuffles in early infancy; first teeth at eleven months, others came quite rapidly; nursed at the breast until eleven months old, since then has been fed on "table food;" ten weeks ago an attack of diarrhœa lasting a week. No other severe illness remembered, but the child has never been strong. Since the diarrhœal attack, has lost flesh steadily, been unable to walk, and a steadily increasing enlargement of the abdomen has been noticed. Jaundiced for one week; dropsical at feet and ankles for a few days; appetite reported ravenous; stools clayey; urine high-colored; patient is quite drowsy much of the time; no fever observed.

*Examination.*—Patient poorly nourished, but not emaciated;



cachectic; well-marked jaundice in conjunctiva and skin; fontanelle not quite closed; head well formed; eight teeth much decayed, and the central upper incisors slightly notched. No enlargement of epiphyses of wrists or ankles. Abdomen is very prominent, circumference at umbilicus nineteen inches. A large tumor can be felt in the left hypochondriac region, extending down almost into the pelvis. Abdominal walls are so thin it can be seized with the fingers and lifted up; its sharp edges and general characters leave no doubt that it is an enlarged spleen. Splenic dulness is five by three inches. Its lower limit is within one and one-half inches of iliac crest. It is perfectly smooth and movable.

Upon the right side of the abdomen another large mass is felt, which is evidently the liver. Its lower border is very distinct; in the median line it is just below the umbilicus; in the axillary line, two inches above the iliac crest. Its vertical line of dulness is five inches. Like the spleen it is smooth and edges sharp. No fluid could be made out in the peritoneal cavity. There was found no enlargement of post-cervical, inguinal, axillary, or epitrochlear glands.

The chest was rachitic, but nothing of importance elicited by examination of the heart and lungs; the temperature 98.5°, pulse 128; feet and ankles dropsical.

The following information was obtained regarding the family: The patient is the youngest of three children; the other two, aged respectively five and seven, although not in robust health, show no evidence of hereditary disease, syphilis or tuberculosis, in teeth or glands, nor is there a history of any symptoms pointing to these diseases. There have been no miscarriages. The mother is a fair sample of the overworked under-fed tenement-house class. She states that she had "malarial fever" while carrying this child and was sick much of the time; severe headaches reported, and alopecia after delivery. She shows no positive signs of syphilis now in throat, bones, or glands. The father, a man of loose habits, neglected his wife, was never examined. The diagnosis was reserved and the case treated symptomatically. A week's observation threw a little additional light on the case. The temperature was taken irregularly both morning and evening, and only once did it reach



100°; urine high-colored, bronze-yellow, 1012, acid, contained bile-pigment and many leucine crystals, but no albumen or casts.

The blood showed an increase of the white globules, the proportion to the red being about one to one hundred. The jaundice appeared to be increasing. Appetite ravenous; rather drowsy, but no other nervous symptoms. Bowels move once or twice daily; passages sometimes dark- sometimes light-colored.

The diagnoses considered were leucocythæmia, malaria, malignant disease, rickets, syphilis, tuberculosis, and amyloid degeneration. Leucocythæmia had been excluded by the examination of the blood, the proportion of white to red globules being not unusual for that degree of splenic enlargement from any cause.

The rate of growth, the absence of distinct fever and the history of none, and the degree of jaundice, which was apparently obstructive, pretty positively excluded malaria.

Such an enlargement of the spleen and liver is not unknown in rickets. It is, however, exceedingly rare, and never, so far as I am aware, associated with jaundice. Moreover, the other signs of rickets were present only in a slight degree.

Primary disease of the liver seemed to be excluded on the following grounds: If enlargement of the spleen had been due to portal obstruction in the liver, other signs, ascites, and dilatation of the abdominal veins would have been present, which was not the case. It seemed clear, then, that the condition of the spleen was independent of the liver, and that both depended upon some common cause. Amyloid degeneration to the degree of causing such a size in spleen and liver is not uncommon in early childhood as a complication of hip-joint disease, caries of the spine, or some other prolonged draining suppurative process. None of these existed, nor was there any evidence in the urine of amyloid kidney, such as almost invariably exists with the degeneration of the spleen and liver.

The diagnosis was now narrowed to syphilis, malignant disease, and tuberculosis, the probabilities being in the order named.

The mother did not attend regularly, and the case was seen only once again for eight weeks. No systematic treatment had been kept up meanwhile. The general condition was unchanged: appetite excellent, bowels moved regularly two or three times daily, stools white but consistent; rarely any evidence of pain. She seemed to have gained rather than to have lost in flesh and strength; jaundice more intense. The circumference of the abdomen had increased four inches, now being twenty-three inches. The spleen now extended four inches below the border of the ribs, and the liver the same distance. Abdomen was elsewhere tympanitic, except at extreme lower portion, where it was dull, apparently from a small amount of fluid, although this was somewhat doubtful.

The examination of the lungs showed only the signs of compression; the dropsy was gone. The progress of the case excluded positively malignant disease, and as nothing was found to substantiate the diagnosis of tuberculosis, that of hereditary syphilis was reached by exclusion. Even at this time there were no enlargements of epitrochlear or inguinal glands, and the posterior-cervical group were scarcely perceptible; the dentition was late, while in syphilis it is usually early; the condition of the teeth, decayed and slightly notched, was such as not infrequently is seen in other cachexiæ; the family history, as stated above, gave no positive evidence of syphilis.

At this date, January 20, potassium iodide was begun, five grains four times daily, and calomel, one-quarter grain, with the same frequency. The bowels, if loose, to be controlled with Dover's powder.

In two weeks' time the jaundice was nearly gone, and in four weeks there was very marked diminution in the size of both liver and spleen. The former projected only two inches below the ribs, and the latter only two and one-half instead of four. The circumference of the abdomen was now twenty-one and one-half inches. No diarrhœa has been produced by the calomel. The iodide was pushed up to thirty grains daily, and then diminished. The child had gained in flesh, in fact was now quite plump.

April 27, the following observation was made: Circumference of abdomen twenty inches; spleen projects one and one-

quarter inches below ribs; liver, two inches. No trace of jaundice; quite plump, but still a little cachectic. Mother asserts that the child is perfectly well. She is running all about the house and is gaining rapidly. All the first teeth have come through, but they are much decayed.

The mother has a baby two weeks old, which has snuffles but no other signs of syphilis.

She took the iodide steadily for a month, then omitted it three weeks, and then took it a month longer. The calomel was taken with about the same regularity. For the past three weeks no medicine whatever had been given.

I never saw the case again, but learned in November that she had died in October of croup after a three days' illness.

*Remarks.*—This case is an unusual one in many respects, most, perhaps, in the size attained by the liver and spleen. It has been the experience at the dispensary to find the spleen enlarged in the greater number of cases of syphilis of long standing, but in very few of the recent cases. The same is true of the liver to a minor degree. In no instance has the size of the organs in the present case been approached. The spleen was about half as large in one child who had tuberculosis as well as syphilis. The autopsy showed the organ to be studded with small gummæ about the size of a pea, associated with thickening of the trabeculæ, etc.

Jaundice, put down in most of the books as a rare symptom in congenital syphilis of the liver, was certainly obstructive in this case, from thickening of the small bile-ducts and pressure upon their walls by the aggregations of lymphoid cells and the new connective tissue, which constitute the essential features of the lesion. Its almost complete disappearance in two weeks after the beginning of treatment after existing for two and a half months was a matter of great surprise. Gee says when the spleen is much enlarged the case is almost always fatal; this indicates very well the severity of the cachexia. The case forms an exception to this rule, as the other symptoms here were very few, and barely sufficient for a diagnosis.

The rapidity of improvement I attribute to the large doses of the iodide administered; for quite a long period the child took thirty grains daily. The advantage of such full doses of this



drug over those of six or eight grains daily, such as are often considered quite sufficient for an infant, has been demonstrated in many other cases of syphilis treated at the dispensary. After three years old, children will bear almost as much as adults, and at all ages tolerate it exceedingly well provided only it be given well diluted, preferably in milk.

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## Current Literature.

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### I.—HYGIENE AND THERAPEUTICS.

Reichmann: Experimental Investigations concerning the Digestion of Milk in the Human Stomach. (*Jahrb. f. Kinderh.* [abstracted], Bd. xxvi., H. 3 and 4.)

Three hundred cubic centimetres of uncooked milk of .06 to .07 per cent. acidity underwent the following changes:

a. After five minutes. In the curd-like fluid withdrawn from the stomach there were numerous large lumps of casein, or else the thick greenish-white fluid coagulated immediately on exposure to the air. There were traces of lactic acid, and in three cases out of five there were traces of peptone; in five cases there was parapectone.

b. After fifteen minutes. There was an increased degree of acidity, lactic acid, but no hydrochloric acid, a small quantity of peptone, considerable parapectone.

c. After thirty minutes. A greenish watery fluid was obtained containing a small number of lumps of casein, .23 per cent. acidity due entirely to lactic acid, quite a quantity of peptone and parapectone.

d. After sixty minutes. The fluid resembled that in case c, acidity .30 per cent., a trace of hydrochloric acid, much lactic acid, much peptone, little parapectone.

e. After seventy-six minutes. The fluid was thick and green, its acidity was .32 per cent., there was much hydrochloric and lactic acid, much peptone, and little parapectone.

f. After ninety minutes. The fluid was the same as in case e, the acidity .30 per cent., there was much lactic and hydrochloric acid, much peptone, and very little parapectone.

g. After one hundred and twenty minutes. The character of the fluid was unchanged, acidity .28 per cent., lactic and hydrochloric acids, very much peptone, very little parapectone.



*h.* After one hundred and eighty minutes. Quantity of fluid obtained very small, light-greenish in color, viscid, without lumps of casein, acidity .10 per cent., lactic and hydrochloric acids, traces of peptone.

*i.* After four hours. The stomach was empty.

When fifty cubic centimetres of milk were used, at the end of one hour a greenish fluid was obtained containing small lumps of casein, and there was slight acidity dependent upon hydrochloric acid.

Another series of experiments was made with boiled milk, three hundred cubic centimetres being used. After three hours the acidity of the fluid disappeared, the digestion being completed after two and a half hours. The character of the acids, the degree of acidity, and the time when the hydrochloric acid appeared were the same as with the experiments with the uncooked milk, but energetic peptonization began sooner and the lumps of casein were softer than with the uncooked milk. When one hundred cubic centimetres of boiled milk were used, digestion was completed in ninety minutes; when twenty-five cubic centimetres of boiled milk were used, digestion was over in fifteen minutes.

After small quantities of milk have been taken hydrochloric acid is traceable sooner than with large quantities, because the dilution of the secreted acid is necessarily less.

Experiments with alkaline milk were made six times: (1) three hundred cubic centimetres of uncooked milk were treated with five grammes of bicarbonate of soda; (2) one hundred cubic centimetres of uncooked milk were treated with 0.6 gramme of bicarbonate of soda every quarter-hour for an hour and a half: the fluid which was then extracted still had an acidity of .2 per cent.; (3) one gramme of bicarbonate of soda was given, then one hundred cubic centimetres of uncooked milk, then successive doses of one gramme of bicarbonate of soda every twenty minutes until five grammes had been taken: the fluid was then withdrawn and found to have an alkaline reaction; (4) one hundred cubic centimetres of the milk were given with one gramme of the bicarbonate of soda, an equal quantity of soda was given every fifteen minutes until five grammes had been taken: then seventy-five minutes after the beginning of the experiment the fluid was withdrawn and found to be neutral; (5) one hundred cubic centimetres of milk and one gramme of soda, the latter repeated every fifteen minutes until seven grammes were taken: the fluid withdrawn at the end of two hours was slightly acid; (6) one hundred cubic centimetres of milk with one gramme of bicarbonate of soda, the latter repeated every quarter-hour until eight grammes

were taken: then two hours from the beginning of the experiment three cubic centimetres of fluid were withdrawn which had a neutral reaction. (In experiments three to six the soda was given in capsules.)

The experiments with alkaline milk showed that alkalinity protects the milk from the peptonizing influence of the gastric juice, and that after two hours one hundred cubic centimetres of such alkaline milk will have left the stomach. In spite of the alkalinity, however, the milk which has been left in the stomach will have undergone coagulation through the influence of the lab-ferment. Other series of experiments demonstrated facts similar to the foregoing. The difference in the rapidity of digestion of the uncooked and the boiled milk is accounted for by the fact that the lumps of casein resulting from the digestion of the former are much larger than those resulting from the latter.

A. F. C.

Cadet de Gassicourt: *The Treatment of Infantile Diarrhoea.* (*Rev. Mens. des Mal. de l'Enf.*, September, 1887.)

Considering the great susceptibility to disease of the intestine in children, the plan which is of greatest importance, especially with nursing children, is to look closely to the diet. The child should be kept at the breast from twelve to eighteen months if possible. If artificial nourishment must be given, in the form of cow's milk, it should be boiled, twice daily if necessary, to prevent fermentation, and the greatest care must be used to keep the containing vessels sweet and clean. Should diarrhoea occur in spite of these precautions, the child should be nursed or fed half or two-thirds as frequently as before, if the attack is a mild one, and lime-water or Vichy should be given either pure, before feeding, or in the proportion of one to five or one to four in the milk. If the attack is a severe one, the milk should be replaced by beef- or chicken-soup, and in almost all cases it will be well to begin the treatment with a purgative. If the case is a mild one, the purgative may consist of a gramme of castor oil for a child under six months of age, and three grammes for one two years of age; fifty to one hundred and fifty centigrammes of bicarbonate of soda with one to three grammes of white magnesia, according to the age, in a little sweetened water. In the severest cases ten or fifteen centigrammes of calomel may be given. If the stools are mucosanguinolent and accompanied with tenesmus, Henoch's prescription may be followed,—an infusion of ten centigrammes of ipecac in sixty grammes of water, to be taken in doses of a coffeespoonful every three hours. Should the stools continue liquid, opiates or astringents must be given, and the author

prefers to give them by the mouth rather than by the rectum. Sydenham's laudanum or paregoric are preferred as opiates, and extract of rhatany as astringent. If the diarrhoea is accompanied by vomiting, Rivière's potion, with cold drinks or small pieces of ice, may be given. If the diarrhoea is of infectious origin, two drops of creasote may be given in a potion consisting of ninety grammes of canella-water and ten grammes of syrup of rum, or three to ten centigrammes of carbolic acid, in the course of a day, in the same potion, or five grammes of benzoate of soda, or ten to forty centigrammes of resorcine, either of the last in the same manner as the preceding. Comby has recommended,—

R Napthaline, .50 gramme ;  
Cognac, 10. grammes ;  
Syr. malvarum, 50. grammes.  
Sig.—Coffeespoonful as indicated.

R Sacchari albi, 10. grammes ;  
Naphthaline, 1. gramme ;  
Iodoformi, .50 gramme ;  
Ess. bergamot, gtt. ii.  
Div. in chart. nu. xx.  
Sig.—One powder every hour.

The author also frequently gives in a soup-  
spoonful of sweetened water half a drop to two drops of Sydenham's laudanum and two drops of dilute hydrochloric acid. This may be repeated several times daily according to the indications. He approves of the method of Hayem of giving a coffee-spoonful of a two-per-cent. solution of lactic acid five to eight times in the course of the twenty-four hours to an infant before nursing. Rilliet and Barthéz's prescription has sometimes been found very effective,—one to three centigrammes of nitrate of silver being dissolved in sixty grains of distilled water, and a coffee-spoonful given every hour until the severe symptoms cease. Rectal injections may also be given containing five to ten centigrammes of the silver salt in one hundred grammes of distilled water. An enema may also be given consisting of five grammes of ipecacuanha-root boiled in one hundred grammes of water until the quantity is reduced to fifty grammes. In case of collapse alcohol, subcutaneous injections of ether, and warm or mustard baths may be given. Brandy is preferred to any other form of alcohol, and one may give eight to twenty-four grammes of it in twenty-four hours, according to the age of the patient and the severity of the case. Mustard-plasters may be applied to the abdomen and the extremities, and the stimulation of mustard-baths will often



be found very beneficial. One or two grammes of ether may be injected subcutaneously two, three, or even four times in the course of twenty-four hours.

A. F. C.

Widowitz: Naphthalin in the Intestinal Diseases of Children. (*Jahrb. f. Kinderh.*, Bd. xxvi., H. 3 and 4.)

This substance was first recommended for certain intestinal affections by Rossbach in 1884, and soon afterwards, as the result of greatly increased experience, he outlined its indications more definitely. The purest naphthalin alone should be used, and he found it invaluable in cases of chronic intestinal catarrh and cholera morbus in children, as well as in typhoid fever. In intestinal tuberculosis he found that it caused some improvement, but no radical change, and for acute diarrhœa it was no better than opium and suitable diet. Rossbach's success was not attained by others who used naphthalin according to his directions, and they reported that it produced hypogastric pain, strangury, tenesmus, and urinary appearances suggestive of carbolic-acid poisoning. Moderate success was reported, however, by a few writers. The author, after extensive and careful use during a sufficiently long period of time to warrant conclusions, decided:

1. That naphthalin is ineffective in the so-called dyspepsias which are characterized by frequent movements of the bowels, and usually by the vomiting of coagulated milk, and is inferior to other medicaments which are in general use for such conditions.

2. In all other forms of intestinal catarrh in children naphthalin should be preferred to all other known means of medication. In simple acute diarrhœa the preparations of opium would be preferable, but for the fact that naphthalin checks fermentation processes, and in this way prevents an acute intestinal catarrh from developing into a chronic one.

The author thinks that the fear of unpleasant results from the use of this drug has been exaggerated. He saw none, but, on the contrary, often observed that children at once began to be more animated and their appetites to improve. There may be idiosyncrasies in regard to its use, as there are to all drugs. He believes that one should begin with small doses,—thirty centigrammes to one gramme daily,—given with suitable excipients to disguise the unpleasant odor. A combination with alcohol, tincture of opium, and oil of peppermint was found very effective not only in making a mixture which could be tolerated by the stomach and palate, but which was especially useful in checking profuse diarrhœa.

A. F. C.



Muñoz: Apomorphine in the Treatment of Diphtheria. (*El Prog. Ginecol.*, July 10, 1887.)

The state of asphyxia which results from the presence of false membranes in the larynx often prevents the action of emetics, and the child dies unless tracheotomy is hastily performed. In such cases apomorphine has been found very effective, for its emetic action is not interfered with whatever the degree of laryngeal obstruction may be. The quantity which may be given should not ordinarily exceed one centigramme, though Dujardin-Beaumetz thinks that fifteen milligrammes may be given with safety in some cases. Other authors advise more cautious use of this powerful drug, and think that not more than two to four milligrammes should be given for fear of collapse and syncope. The drug may be dissolved in cold, but better in warm, water. It should be prepared freshly for each occasion, and should be administered hypodermically. Some writers see no advantage in fresh solutions, and insist that there is no danger of decomposition. It is thought that the accidents from the use of the drug have occurred in cases in which it was impure or badly prepared. The same emetic effects may be produced with solutions of the hydrochlorate of apocodeine or aponarceine. A. F. C.

The Treatment of Diphtheritic Angina with Chloral. (Editorial, *Le Concours Méd.*, August 27, 1887.)

The chloral treatment for diphtheria is not a novelty. It was advocated six years ago by Barduzzi and Rokitsky, and is now recommended anew by Mercier. In the treatment of membranous croup he gives two, three, or five grammes of chloral in the form of syrup of chloral (French Codex,—i.e., one to twenty), according to the age of the patient, in teaspoonful doses every half-hour. If there is indigestion, the treatment is begun by the administration of a dose of ipecac, and the chloral should be well diluted to prevent pain in the stomach. Belladonna ointment is also rubbed upon the glandular swellings, and the syrup of quinquina is also given for its tonic effect. The child is allowed to eat and drink whatever is most agreeable to him, and for forty-eight hours some responsible person should be with him constantly to see that the directions are enforced. At the end of twenty-four hours no change will be found in the condition of the patient, but at the end of forty-eight hours the false membranes will have completely disappeared. When the membranes are beginning to separate the use of the chloral gives pain, and there is a sensation of smarting in the throat. It was observed that in children with light complexion the false membranes did not

disappear until the third day. If redness or swelling of the tonsils remains after the membranes have been removed an astringent gargle should be used, the chloral, of course, being discontinued. If there should be dyspnoea and spasm in the course of the disease, a two-per-cent. solution of cocaine should be used locally. If the disease develops into laryngeal diphtheria, the chloral is no longer indicated. The author thinks that the chloral acts as a general antiseptic, and that forty-eight hours are required for the saturation of the system by it,—that is, before its effects can be seen. By this means he asserts that he has saved ninety-five cases out of one hundred.

A. F. C.

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## II.—MEDICINE.

Caillé: Introduction to a Discussion upon the Etiology and Treatment of Cholera Infantum. (*N. Y. Med. Presse*, September, 1887.)

The diarrhœal diseases which physicians in large cities are called upon to treat may be divided into four groups:

1. Dyspeptic gastro-intestinal catarrh, the simple non-inflammatory diarrhœa of infants and older children.
2. Acute choleraic diarrhœa, or cholera infantum.
3. Acute, subacute, and chronic follicular enteritis, or enterocolitis.
4. Infantile atrophy.

These four groups show, clinically and pathologico-anatomically, a connected series, from simple dyspeptic diarrhœa to intestinal atrophy, through which it is possible for a child to pass, especially if he is surrounded by unfavorable conditions as to temperature and nutriment. While it is universally admitted that atmospheric and telluric influences play an important part in causing diarrhœal troubles, their exact bearing is unknown. Other causative influences are clothing, habitation, nutriment, and probably those which relate to infection. The greatest number of cases of diarrhœal disease occur between the ages of one and two years, without regard to sex. Bottle-fed children are rather more commonly attacked than the breast-fed, if the mothers of the latter are in good condition, but one is in as great danger as the other when once the disease has begun. Weaning is an important factor in the etiology of this condition, and so is unsuitable nutriment, especially such as is not fresh or such as readily undergoes fermentation. With regard to the causative influence of infec-

tion, several different bacilli have been isolated from diarrhoeal discharges, but their value has not yet been absolutely determined. The clinical phenomena in acute diarrhoea, in addition to the frequent evacuations, are pain with or without high fever, constant vomiting, a watery consistency of the stools, want of animation, pale and cool surface, cold hands and feet, *sunken* expression about the eyes, small, frequent pulse, weak voice, cyanosis, dry tongue, great thirst. The stools may contain traces of blood, epithelium, and bacteria. The fontanelles are sunken and the cornea without lustre. The general condition is called *hydrocephaloid*, and the condition of the skin constitutes *sclerema*. The patient may die in collapse, the discharges may cease suddenly, or the condition may become chronic. Nothing characteristic is found upon autopsy if the patient dies.

There is no specific treatment for cholera infantum, but prophylactic treatment is especially valuable. Physicians can do much in the way of giving useful instruction as to hygienic precautions concerning such diseases. Nursing children must not be fed too frequently, and nursing mothers must avoid bad beer or anything else which may cause gastric trouble. Plenty of water should be given to drink. The diet should consist largely of boiled milk, gruel, salt, a little sugar, and lime-water. In the acute stage of diarrhoea, while the tongue is heavily coated, one may give five or six powders, at intervals of an hour, containing each three decigrammes of calomel and two of sugar. If the weather is very hot, the child should be bathed in lukewarm water twice daily. If the tongue remains coated twenty-four hours after the calomel has been given, one may give small doses of dilute muriatic acid, with or without pepsin or with opium. Instead of the calomel, magnesia with rhubarb may be given. In treating cholera three indications are to be satisfied: the prevention of fermentation, securing rest to the intestinal tract, overcoming collapse if present. Bits of ice, cognac, cold tea, lime-water, and toast-water may be freely given, and for medicaments bismuth, nitrate of silver, benzoate of soda, and carbolic acid in doses suitable to the age of the child and the severity of the condition. Chloral, bromide of potash, and tincture of iodine with myrrh have been found very useful to control obstinate vomiting. Rectal injections of warm water containing a small portion of salicylic acid have also been found very serviceable. Camphor, caffeine, ether, and benzoic acid have also given satisfactory results, and subcutaneous medication may be required if the vomiting is rebellious. If the disease passes into the chronic stage, the preparations of tannin and acetate of lead, with or without opium, may be used. Among the prepared foods which may



be recommended for patients suffering with this disease, the peptogenic milk-powder and some of the meat-peptones are mentioned.

A. F. C.

**Gurnon: Epithelial Desquamation of the Tongue in Children.** (*Rev. Mens. des Mal. de l'Enf.*, September, 1887.)

Bergeron described in 1864 two varieties of epithelial desquamation of the tongue in children. The subject is one which is almost entirely ignored by the text-books on diseases of children. The first variety of Bergeron is much the more frequent, and is called by Fournier and Lemonnier *marginal exfoliative* glossitis. It consists of patches upon a healthy mucous membrane, the patches being grayish-white in color, circular, and raised one or two millimetres above the surrounding mucous membrane. It begins in an apparent thickening of the epithelium and develops rapidly, reaching its maximum dimension in a few days. It may begin at the border, the base, or the point of the tongue, and extends irregularly. There may be two, three, or five of the patches, and they may unite and form an irregular figure. The desquamation begins when the patch is formed, the mucous membrane around it being quite congested; the congestion gradually pales until the healthy tissue is reached. The disorder does not extend to the buccal mucous membrane, and does not interfere with the functions of the child, although the tongue may be denuded of epithelium in the course of five days. This is quickly restored, as a rule, especially if this condition has occurred in connection with an acute general febrile disease. The microscopical examination of portions of these patches which have been scraped off shows swollen, nucleated, granular cells identical with those which form the middle and lowest layers of the rete mucosum. The epithelium does not seem to be entirely destroyed upon the tongue, a fine layer being always left, perhaps at the top of the papillæ, while the inter-papillary epithelium is almost intact. The derma is normal and its vessels are not dilated, according to the author's observations, although Van Lair thinks the lesion is a mixed one which involves both the dermal and the epithelial portions of the papillary layer. Parrot and H. Martin, on the other hand, think that the derma is the principal seat of the disease, and that the superficial phenomena are secondary in character. This condition is observed principally during the first three years of life; certain rare cases have been reported between the ages of twenty and forty years. Of the forty-four cases seen by the author, twenty-eight were in girls and the rest in boys. The only cause which can be mentioned with anything like con-



stancy is dentition. Parrot looked upon the lesion as a lingual syphilide, and could substantiate his assertion in twenty-eight of the thirty-one cases which came under his observation. Others, including the author, admit its occasional association with syphilis, but not as a matter of necessity. In regard to pathogenesis, Unna considered this epidemic inflammation as a trophic disorder due to a nervous lesion, with vascular spasms. Gubler thought it was due to a parasite, and this theory, while probable, has not yet been demonstrated as a fact.

The second variety which Bergeron described was referred to by him as a *tongue resembling a geographical map*, from the sharp and irregular outlines which characterize it upon the point and borders of the tongue, seldom upon its centre. It occurs in very young children, like the first variety. Its earliest stages have never yet been described. The patch of denudation is bright red, without shading, and projecting fungiform papillæ are prominent in it. The desquamation is repaired in the course of three or four weeks. This variety is associated with digestive disorders, and it has also been seen in several cases which were associated with syphilis. It is not a necessary accompaniment or associate of that disease. A third form of epithelial desquamation is mentioned by the author, and has not been described by any previous writer. It consists in a simple thinning of the epithelial distribution, without any distinct limits or projecting borders, the mucous membrane gradually becoming thinner until the centre of the patch is reached. There is but one patch, and that along the median line of the dorsal aspect of the tongue, extending from before backward. It may extend over the entire length of the tongue. It continues a few days, and then the epithelium is renewed from the periphery to the centre, or from the base to the point. This variety seemed to have no effect upon the general condition of the child. Neither of the three varieties which have been described are likely to be confounded with other forms of glossitis or stomatitis.

A. F. C.

The Discussion on Whooping-Cough at the Sixth Congress for Internal Medicine at Wiesbaden. (*Jahrb. f. Kinderh.*, Bd. xxvi., H. 384.)

This discussion did not bring out any theory that was especially new, but it demonstrated the value of discussions upon such familiar subjects. Vogel and Hagenbach introduced the discussion, and showed that the prevailing opinion was that whooping-cough is an infectious disease. Vogel emphasized the fact that it was a local infectious catarrh, analogous to gonorrhœa. The absolute proof of this in the shape of a

fungus or bacterium had not been isolated as yet, probably on account of methods which are still imperfect. Hagenbach believed that the laryngologists and the bacteriologists would be obliged to work this problem out with mutual assistance. To accomplish this one must not use the whooping-cough discharge mingled with the saliva from the mouth and its myriads of bacteria, but secretion which is removed directly from the larynx or the trachea. The remarks which followed these opening papers dealt almost exclusively with the treatment of the disease. Heubner suggested a plan by means of which those who report cases could readily publish their results in regard to treatment, and which was to consist of a schematic curve which would indicate the daily number of paroxysms. Sudden and sharp changes in this curve might be used to indicate the positive results of a successful means of treatment. Michael had already used such a curve, and showed a scheme illustrating six months of treatment by means of insufflations of different powders into the nose. The results in some of his cases were very satisfactory. Schliep recommended the use of the pneumatic cabinet for this disease, and reported favorable results from its use. Hagenbach recommended inhalations and insufflations of quinine, and Binz endorsed such treatment, insisting also upon the necessity of using large doses, much larger than would ordinarily be tolerated. Sonnenburger recommended antipyrin in small but frequently-repeated doses. He had seen excellent results follow its use.

A. F. C.

Seibert: *Acute Gastritis Gravis in Early Childhood.* (*Jahrb. f. Kinderh.*, Bd. xxvi., H. 3 and 4.)

The author summarizes his views upon this subject as follows:

1. Severe cases of acute gastritis in young children are infrequent, but when they occur they may be mistaken at their beginning and during their development for typhoid fever and malaria, and at their beginning also for meningitis.

2. The cause of this disease is always some improper substance which has been taken into the stomach; for example, bad beer or spoiled milk.

3. The treatment should consist,—(a) in the removal of the exciting cause, abstinence for a season, and then the use of milk, porridge, etc.; (b) the application of cold towels over the stomach, and several rectal enemata of cold water daily; (c) small quantities of food at regular intervals, but not too frequently. No quinine unless there is a malarial complication. Pepsin or acids may be required after a time. If

stimulation is necessary, it had better be administered *per rectum*; (d) as the appetite returns the regular diet may be resumed, but very gradually.

A. F. C.

Nothnagel: The Causes, Localization, and Treatment of Chorea. (*Arch. f. Kinderh.* [abstracted], Bd. viii., H. 6.)

Contrary to the view of some investigators, especially English and French ones, the author holds the opinion that, as a rule, the heart is not affected in chorea. Without doubt there are anæmic murmurs, which can be distinctly heard in such cases, but probably no valvular lesions. This statement is sustained by the investigations which were made at the Bonn Polyclinic, and which showed that there was no particular relation between endocarditis on the one hand and rheumatism and chorea on the other. English authors particularly have stated that the endocarditis which results from rheumatism causes capillary emboli in the brain, thalamus opticus, and corpora striata, or more particularly in the nucleus caudatus and nucleus lentiformis. It is quite certain that choreic movements are not excited by affections of the last-mentioned structures. Such a thing is possible in connection with those which were first mentioned, but it has never been demonstrated. The second view, that the rheumatic morbid element produces disorders in the brain, and that therefore a relationship exists between acute rheumatism and chorea, deserves some consideration. The author regards chorea as a pure neurosis, excited, perhaps, by a sudden impression, such as terror, for example, upon a predisposing tendency to diseases of that character. While experiments upon dogs have shown that chorea may arise from disease of the spinal cord, this is not so in human beings; for the muscles of the eyes are frequently involved, and, in addition, psychical changes are also present. The greater number of authors consider the disease as a diffuse functional disturbance extended through the entire nervous system, without being able to say with exactness just what the nature of the disturbance is. With reference to the treatment of chorea by means of internal medication, the author has seen no good results from the use of bromide of potash, chloral, propylamin, and many other drugs. His plan of treatment consists in the removal of all irritants to the nervous system, whether acting through the stomach or the mind; the use of arsenic; the wet pack daily or twice daily, the water in which the sheets are dipped being of the temperature of 20° to 22° C.; and the use of the constant galvanic current. The arsenic should always be given in the form of Fowler's solution, of which five grammes may be di-



luted with fifteen of distilled water. For children four-drop doses, three times daily, should be given at first. This dose may be gradually increased until twelve drops at a dose are taken, and this quantity gradually diminished until the original dosage is reached. The patient should remain in the wet sheets from three to fifteen minutes, and then be gently dried. In using the electricity, broad moist electrodes are employed, the current being allowed to pass from the forehead to the neck, or from one ear or temple to the other. Two elements should be used, at first, with children, and for one-half to one minute. The electrodes should be slowly passed over the skin to weaken the current. The neck and spinal cord should also be treated, and it is immaterial whether the electrode be passed in an upward or downward direction. No interruptions or changes of the current should be used in treating children. In some cases neither these methods nor any others suffice to effect a cure. After the arsenic has been used from six to ten weeks it should be discontinued. If there is insomnia, morphia, chloral, or even chloroform may be required.

A. F. C.

Becker: Chorea in Childhood. (*Arch. f. Kinderh.*, Bd. viii. H. 6.)

By chorea minor is meant a psycho-motor neurosis, in which sudden, involuntary, aimless movements are made, which include a psychical element to a greater or less degree. The author's observations have led him to divide the cases which he has seen into two groups, representing,—

1. Idiopathic chorea, in which no etiological factor is perceptible.

2. Sympathetic chorea, which occurs in connection with other diseases.

Its frequency as compared with other diseases among children is insignificant. Of ten thousand cases of disease in children at Baginsky's clinic in Berlin, there were but twenty-one cases of chorea. It occurs rather more frequently in cold than in warm weather, and also at the time of puberty with greater frequency than at other periods. Females are more commonly affected with the disease than males. With regard to etiology, articular rheumatism frequently stands in a causal relation, and diphtheria less frequently. The assumptions of Roger and Gerhardt as to etiology led the author to the consideration of the following questions:

1. Does chorea occur as a result of rheumatism?
2. Does rheumatism occur as a result of chorea?
3. Do heart-affections occur as a result of chorea?



## 4. Does chorea occur as the result of heart-affections?

An analysis of these questions led to the following answers:

1. Chorea occurs so frequently after rheumatism that the latter must be considered an etiological factor of the former.

2. It could not be found that articular rheumatism was at all dependent upon chorea.

3. Heart-affections were found in patients who had previously suffered from chorea. They were readily attributable to anæmia, however, excepting in cases in which articular rheumatism had preceded.

4. Cases of chorea were found occurring subsequently to or simultaneously with heart-affections, but in all these cases there was a previous history of heart-disease.

In the twenty-one cases which the author studied the disease came on for the most part without prodromata, the symptoms at first being rather mild in character. Its cause was always either subacute or chronic. The movements usually began in a single group of muscles, or part of the body, increased in extent and intensity, and finally, in most cases, involved the entire muscular structure. Gradually the intensity diminished, and finally the movements would cease altogether. Recurrences of this disease are not infrequent. In three of the author's twenty-one cases there was recurrence, and the patients were all females. Germain Sée was quoted to the effect that if the disease continues longer than sixty-nine days a recurrence is likely to take place. The average duration of the disease from the comparison of a large number of cases was found to be fifty-eight days. The diagnosis of this condition is usually a matter of no difficulty. The prognosis of the disease itself is good, but when it is complicated with heart-affections, articular rheumatism, pneumonia, and profound anæmia, the prognosis will depend upon the intensity of the complication. In the treatment of the author's cases no narcotics were used. The tonics were principally preparations of iron, especially the carbonate and the citrate. The valerianate of zinc and the bromide of potash were used without appreciable benefit, while arsenic was found entirely satisfactory, its influence upon the disease being of the most positive character. It was given in two-drop doses of Fowler's solution after meals, and this quantity was gradually increased to five drops, being taken with an equal quantity of cinnamon-water, and properly diluted.

A. F. C.

Silbermann: Icterus in the Newly-Born. (*Arch. f. Kinderh.*, Bd. viii., H. 6.)

The author's conclusions are :

1. Icterus neonatorum is an icterus of resorption, and therefore hæmatogenous in character.

2. The biliary engorgement is seated in the biliary capillaries and interlobular bile-ducts, which are compressed by the dilated branches of the portal vein and the capillary blood-vessels of the liver.

3. This engorgement in the vessels is effected by a change in the circulation of the liver occurring soon after birth, which is one of the indications of a general change in the blood-plasma.

4. This change, which is induced by the destruction of many blood-corpuscles soon after birth, consists in a kind of blood-fermentation.

5. The more feeble the infant the more intense will be the icterus, for in such a child the destruction of corpuscles and the consequent blood-changes will be much more decided than in a vigorous child.

6. As a consequence of the destruction of so many red corpuscles there is abundant material for the formation of biliary coloring-matter, and under the influence of the fermentation process alluded to this accumulates for a long time and in considerable quantity in the hepatic vessels. A. F. C.

Tobeitz: Measles. (*Arch. f. Kinderh.*, Bd. viii., H. 5.)

The clinical portion of the author's studies upon this subject led him to the following conclusions:

1. Measles constitutes a very dangerous infectious disease for very young children, especially if they were suffering from any other disease at the time of the attack. The danger is not in the infectious process *per se* so much as it is in the changes excited by it in the respiratory tract. Rachitis seems to furnish a kind of protection from severe lung-complications.

2. Not only is the skin involved in this disease, the mucous membrane of the digestive and respiratory tracts and of the auditory apparatus is also always more or less diseased, and the latter conditions exist several days before the exanthema appears upon the skin. The changes in the mucous membranes may lead to superficial destruction of the tissues.

3. Neither the form, the extent, nor the intensity of the external phenomena can be taken as a basis for any prognostic conclusion, for the external manifestations do not have the significance that belongs to the mucous membranes.

4. In most cases of measles, swellings of the peripheral lymphatic glands occur.

5. In cases which run a favorable course a slowness and irregularity of the pulse is frequently noticed, while it is never

noticed in those which end fatally. It may therefore be considered a favorable prognostic sign.

6. The presence and development of measles does not prevent infection from varicella at the same time; it appears to diminish the possibility of such an event, however, and has a favorable influence upon the course of the disease in case infection actually occurs.

A. F. C.

Toledo and Graucher: Axillary Adenopathy in the Course of Tuberculosis of the Lungs. (*Le Concours Méd.*, August 27, 1887.)

The foregoing is the title of an inaugural thesis by Toledo, the question being a new one to which Graucher recently called attention, exhibiting at one of his clinics a little girl, who, after suffering from pleurisy, entered the hospital and disclosed tuberculous lesions of the lungs and a large glandular tumor in the right axilla. Hypertrophied glands were also found at the level of the supra-clavicular region and the submaxillary region of the same side. Graucher also related two other cases in which the coexistence of tubercular lesions of the lungs and axillary adenopathies had been observed, and showed how the relation of cause and effect could be naturally traced between the pulmonary and the glandular lesions. The tubercular lesion of the lungs may infect the glands in the axilla through the medium of the pleura, either by the direct way of the lymphatics, which go from the thoracic wall to the axilla, or by way of the supra-clavicular glands. This course in the development of tuberculosis has importance in some cases with reference to diagnosis and prognosis. The glandular swelling should call attention to the yet latent pulmonary disease, and to the necessity of its extirpation to prevent the infection, which may then possibly be local, from becoming general. Graucher's advice is, therefore, pertinent that one should never neglect to explore the axilla of a phthisical person, and that one should never neglect to auscultate the lungs if a tumor in the axilla is found.

A. F. C.

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### III.—SURGERY.

Jouliard: Prognosis and Treatment of Certain Forms of Fracture in Children. (*Rev. Mens. des Mal de l'Enf.*, September, 1887.)

This paper includes an analysis of twenty-six cases of fracture, of different forms, in boys in the hospital service of M. de Saint Germain. The details of fourteen of them, in which the femur was fractured, are narrated. Most of them were fractures at the junction of the upper and middle thirds, and



showed an initial shortening of one to three centimetres, indicating the rupture of the periosteum and the displacement of the fragments. Effusion into the knee-joint in connection with fracture of the thigh occurred in the majority of cases, and that, too, on the very day of the accident. This confirms the statement of Allison with respect to this condition. In eight of the fourteen cases which are narrated there was no eventual shortening; in four the shortening was only one centimetre; in two very bad cases it was only one and one-half centimetres. In none of the cases was the shortening sufficient to cause lameness. The treatment consisted in the use of the American extension apparatus, a weight of two to four pounds being used, according to the date of the fracture and the age of the child; counter-extension being obtained by raising the foot of the bed to the height of two bricks. Two criticisms upon the apparatus of splints and adhesive plaster which are used in the method of treatment referred to are, that it is not always at hand, and it must be made to order when required, also the wooden splints are liable to ulcerate the integument by prolonged contact with it, and hence require careful packing with cotton wadding at the exposed surfaces and frequent inspection. The author found that the splints could be dispensed with, and his results show that the unavoidable movements of the child's body with his simplified apparatus did no harm, and did not interfere with the formation of callus. He also believed that the effect upon a child's disposition and digestive organs by the use of such simple means is far better than can be obtained by the restraint and confinement of splints and fracture-boxes. With the simple adhesive plaster strapping children must be carefully watched, as it is liable to cause itching after it has been in position several days, and this may induce a child to tear it off if possible. Among the author's cases there were also seven of fracture of the leg, four being simple and three compound. Of the four simple fractures, three involved both bones and one the fibula alone, constituting the rarely seen fracture of Dupuytren, and occurring in a boy thirteen years of age. In these simple fractures the limb was first kept in a fracture-box enveloped with moist compresses for several days until the swelling was sufficiently overcome, then the fracture was reduced, and a plaster bandage extending above the knee used for fifteen or twenty days longer, after which a glass bandage was used. Of the three cases of compound fracture, two resulted in complete recovery under antiseptic dressings, and one was fatal from tetanus. There was also a case of double fracture of the humerus, one at the middle of the bone and one five centimetres higher.



It was treated with a glass bandage with perfectly good result. The fractures of the forearm were four in number, and they involved both bones. The results in all cases were satisfactory.

A. F. C.

Braun: The Operative Treatment for Intestinal Invagination. (*Jahrb. f. Kinderh.*, Bd. xxvi., H. 3 and 4.)

The author's paper was suggested by the following case. Intestinal invagination had developed in a child three months old. There was no question as to the diagnosis, for the prolapsed intestine could be distinguished in the rectum. All non-operative measures had been tried without success, and, although the child had already been sick six days and was very feeble, the author decided to perform laparotomy. A tumor was found lying in the left hypochondrium, crescentic in shape, drawn upward through the torn mesentery and mesocolon, and firmly fixed, at the upper end of which lay the contracted ileum and vermiform appendix. A careful attempt was made to separate the parts, but in doing so the intestine was torn at the point where the invagination began. There was an escape of faecal matter, and the only course which could be adopted was to resect the injured intestine and unite the divided ends, which was done. The child died one hour after the operation was completed. The sutures had held, and there was no evidence of peritonitis. The resected portion of intestine was eighty centimetres long, its mucous membrane being grayish-yellow in color, and it was composed of the lower portion of the ileum, the cæcum and vermiform appendix, and the ascending and transverse colon. The upper segment of the part which had been invaginated was gangrenous. Leichtenstern has reported thirty-nine cases of ileo-colic invagination, all of which were fatal, but notwithstanding this bad showing the author thinks that recovery in such cases should not be considered an impossibility. In his case the invaginated portion was twenty-five centimetres long, but it was so folded that its length was reduced, while *in situ*, to three or four centimetres. He thinks that this folding explains the readiness with which spontaneous relief sometimes occurs, also the success which sometimes attends therapeutic measures, and the increase and diminution of the invagination which are occasionally apparent. The use of large injections of water to relieve this condition after it has lasted some time is believed to be dangerous, as gangrene may be already present and the increased pressure result in perforation.

In the literature of this subject the author found: (1) Reports of fifty-one laparotomies for the relief of invagination, thirty in children and twenty-one in adults, with forty fatal results.

(2) The invagination was relieved in eighteen children, but fourteen of them died; the operation failed in twelve children and twelve adults, all of them dying; in three children and six adults enterotomy was performed after the failure to relieve the invagination, all of them dying. (3) In three children and seven adults enterotomy was performed without any attempt at relieving the invagination, all the cases being fatal. The phenomena of obstruction had lasted in the four children who recovered for half a day, one, four, and thirty days, their ages being six, seven, nine, and twenty-four months, respectively. In the five adults who recovered the periods of obstruction lasted a few hours, four, nine, seventeen days, and one year, respectively. Death followed the operations upon the children at periods varying between a few hours and two and a half days. Experience has shown that if operative measures are to be successful they should be instituted within one or two days from the time when the obstruction is established, at a time when there is still very little tympanitis or peritonitis. The younger the patient the sooner should the operation be performed. Among the operations which have been successfully performed have been several which were not done until the invagination had existed four or five days; in one case it had lasted for a month. If an operation is performed the intestine must be very carefully examined, in order that a resection may be made if any portion of it is at all gangrenous, and also that any existing tumor, which may have caused the invagination, may be discovered and removed. The formation of an artificial anus after an unsuccessful attempt to relieve invagination offers very little chance for success, and the same is true with respect to enterotomy.

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A. F. C.

A SECTION of the New York Academy of Medicine, to be devoted to the discussion of Diseases of Children, has just been organized, with Dr. J. Lewis Smith, Chairman, and Dr. J. Henry Fruittight, Secretary, for the current year. The meetings will be held in the Academy, 12 West Thirty-first Street, on the fourth Wednesday evening of each month, excepting the usual summer vacation. Arrangements will soon be completed whereby the proceedings of the Section will be published in the ARCHIVES.

FOR those practitioners who are inclined to call all "sore throats" occurring in children "Diphtheria," a paper on the "Diphtheroid Throats," by S. Solis-Cohen, of Philadelphia, to appear in the February ARCHIVES, will be of practical interest.

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Original Communications.

THERAPEUTICS OF INFANCY AND CHILDHOOD.

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(Continued from January Number.)

I.—FEEDING OF SICK CHILDREN. (*Concluded.*)

DYSPEPSIA is one of the functional disorders of the stomach, and depends sometimes upon slight changes in the gastric mucous membrane. It consists in partial or complete loss of appetite, with more or less impaired digestion. In regard to this, however, in every individual case, it is good not to rely too implicitly upon the reports of mothers or nurses. Older children will complain of præcordial heaviness. They will suffer, as do infants also, from eructations, which, when they result from swallowing air, are absolutely odorless, but when they consist of actual gastric gases, have a very faint odor. A sensation of oppression and frontal pain is complained of by older children; the younger ones are apt to vomit.

The causes of dyspepsia must be sought for either in anatomical changes in the organ, which can rarely be proven; or (more frequently) in quantitative or qualitative changes in the secretion; or in a changed nervous influence, as, for instance, in fever; or in an abnormal condition of the food, which is the most frequent cause.



The treatment of this disorder consists chiefly in abstinence or in the use of the greatest care in the preparation of meals. Milk requires boiling, peptonizing, or treating with muriatic acid according to the method I have detailed before. In every case the admixture of farinaceous decoctions and a little salt improves the digestibility of milk though prepared as described. In many the latter alone, with or without a meat soup, will be the only food which is tolerated. The gastric secretion of infants who have been fed artificially, is liable to be hyperacid. Alkalies should be given at once. The addition of a few grains of bicarbonate of sodium (baking-powder) to the food may suffice. A few grains of an alkali (magnesia, sodium, calcium, according to the indications explained elsewhere) given a few minutes before every meal, act more surely.

VOMITING has been mentioned among the symptoms which accompany dyspepsia. In the infant, however, it is almost a normal occurrence. The infantile stomach is vertical and cylindrical, and the fundus but little developed. Thus, whenever there is a tendency to empty the stomach the antiperistaltic motions do not press against the fundus, but directly upwards. There is, therefore, less genuine vomiting than a mere overflow of the contents, which takes place so easily that the babies are not disturbed by it.

The treatment of such cases, if treatment be required at all, would consist in the application of some dietetic rules. The infant should have less food, and at longer intervals; should not be carried about immediately after meals; ought not to be shaken or jolted; nor carried face downwards.

This overflow takes place, as a rule, immediately after the baby has been nursed; at that time the milk is still fluid. If vomiting occur a little later, the milk will be coagulated; if, then, the milk be not coagulated, the stomach is not in a normal condition. In these cases, and particularly when the baby lives on artificial food, there is uneasiness and pain associated with the vomiting. An acid mucus is expelled, together with the contents of the stomach; these are the cases in which antifermentatives, such as nitrate of silver, bismuth, resorcin, are indicated. Sometimes antacids alone will suffice, as detailed before.



GASTRITIS. ACUTE GASTRIC CATARRH.—The feeble, the anæmic, the convalescent, and the feverish are predisposed to this affection. But it may occur in the previously healthy as well. In all such children the production of normal gastric acid is diminished, and digestion impaired thereby. Besides, in all of them, the muscular power of the stomach is reduced.

Cold or hot ingesta, too large quantities of food, acids, spices, irritant medicines, alcoholic drinks, fat meat, cake, decomposed food with its ferment, each may be the cause of acute gastric catarrh, and must be carefully avoided; dentition, as such, is not a cause. Exposure to changes of temperature is apt to produce gastritis, but the usual cause is improper food. A single small meal, consisting of, in that case, indigestible food, increases pain, vomiting, and fever. Abstinence and cold water to the head act well when there is a tendency to convulsions. Cold applications to the heart will also reduce the temperature of the whole body. A warm bath will frequently do good. *I do not, however, advise bathing or handling the child much while the convulsion is lasting.* When thirst is very great, small quantities of ice-water should be given often, or seltzer-water, or Vichy, or Apollinaris; also water to which dilute muriatic acid has been added in the proportion of one to three or ten thousand.

Solid food must not be given. When there is a great deal of mucus, milk must be given very much diluted, or prepared after Rudisch's method.

When the tendency to vomit is great, food and drink must be given in teaspoonful doses, and, where the sensitiveness of the stomach is very marked, mucilaginous and farinaceous foods only will answer, together with small doses of bismuth repeated every one or two hours.

Where acid is predominant, calcined magnesium will answer best, if given in small doses frequently repeated; also bicarbonate of sodium, and very small doses of opium, one-sixtieth to one hundred and fiftieth of a grain, every hour or two hours.

CHRONIC GASTRIC CATARRH is either the result of an acute catarrh, or of the continuation of injurious influences. Large and frequent meals, too cold or too hot food, and fast eating are frequent causes. The stomach may be either in a hyperæmic or in an anæmic condition; it may be hyperæsthetic

or atonic. Its secretion may be faulty or deficient. All of these changes may take place in the stomach without any complication on the part of neighboring organs, or these may be the only, or partial, causes of the gastric disorder; thus pre-eminently cardiac or pulmonary ailments, which result in impaired circulation of the distant organs. Thus many a chronic catarrh of the stomach, both in the young and adult, requires among its first indications a proper attention to the original cause. At all events, the number of meals and amount of food must be adapted to the digestive powers. Medication can do good service in most cases, either such as is directed to the mucous membrane itself (alkalies, bismuth), or to its faulty secretion (pepsin with muriatic acid, resorcin), or to the debilitated condition of its muscular power (strychnia). At all events, the children must be taught to eat slowly. Their food must be tepid, and not too much diluted, inasmuch as absorption in many cases is slow. Sugar, fat, and starch must be allowed in small quantities only.

ULCERATIONS of the stomach (and duodenum) demand that the organs should be kept as alkaline as possible. Abnormal acids (acetic, butyric, caprylic, or lactic in excess) must be neutralized before food is given. An occasional antacid is not sufficient to obtain that end; it must be given regularly, every two or three hours, also a few minutes before a meal. Sodium and magnesium salts, which contain carbonic acid, must not be given regularly. That gas produces peristalsis. Calcined magnesia answers best in doses of one or two grains, administered every hour, or every two or three hours, in water which must not be too cold. Hot water is even better. More than that quantity is seldom tolerated because of its purgative effect (which, however, is very welcome in patients with a tendency to constipation). When a larger quantity of antacids is required, carbonate or phosphate of calcium may be added to the magnesium, with or without the subnitrate or subcarbonate of bismuth.\* That medicinal treatment must

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\* The effect of lime-water is in part imaginary. If given for the purpose of neutralizing acids, it is a failure. Its beneficial action on otherwise indigestible cow's milk cannot depend on the minute dose of the antacid contained in it.

be continued through weeks or months. Without it I see no gastric or duodenal ulceration getting well, in spite of the most careful dietetic regulations.

The very function of the diseased organ is a great danger. Both stomach and duodenum must be kept as idle as possible, and their labors made easy. No indigestible food must be given, no solid food permitted. Most cases in older children bear boiled milk (in some mixed with a little bicarbonate of sodium), strained oatmeal or barley gruel, rice or arrow-root water, and stale wheat-bread; a few, also, raw beef, scraped. Some tolerate nothing but boiled milk, or buttermilk. There are those who prefer kumyss, matzoon, peptonized milk, or that prepared with muriatic acid. Whatever they take must be swallowed slowly. Milk, when drank hastily, is liable to coagulate in big, hard lumps, and proves indigestible and injurious. The same milk, when taken by the mouthfuls, or from a spoon, will prove beneficial. The milk must be boiled in the morning, and heated over again several times during the day. It must not be cold when taken, and may be mixed with a little table-salt. Many prefer, and tolerate best, the mixture of milk and cereal decoctions. Such must be the food for weeks and sometimes for months; the meals must be small and more numerous. Thus the patients will get well, and thus only.

ACUTE AND CHRONIC ENTERITIS, INTESTINAL CATARRH, with diarrhœa as a prominent symptom, compare with acute and chronic gastritis in their mutual relation. Acute catarrh of some duration extends mostly over the whole intestine; its worst cases are also complicated with the same condition of the stomach. The most serious forms are those of "acute gastro-enteritis." In them the diet must be a very strict one. *No raw milk, no boiled milk, no milk at all in any mixture*, in bad cases. In the very worst cases *total abstinence* for from one to six hours, or much longer; afterwards, teaspoon doses of a mucilaginous or farinaceous decoction from time to time. A good preparation is the following: Five ounces of barley-water, one or two drachms of brandy or whiskey, the white of one egg, salt, and cane-sugar; a teaspoonful every five or fifteen minutes, according to age or case. Later on, a table-spoonful of boiled milk may be added. The same may be



mixed with mutton-broth, which, with the white of egg, is better than beef-soup or beef-tea in convalescence. In vomiting abstinence is mostly superior to ice; the latter may sometimes quiet the stomach, and feel pleasant momentarily, but it stimulates peristalsis. Beef-tea, in its customary preparation, ought to be avoided. In convalescence, when given at all, it ought to be mixed with barley- or rice-water. Towards the end of the disease, or when the discharges are numerous and copious, the blood becomes inspissated, the circulation slow, and thromboses (hydro-encephaloid) form in the smallest veins of distant organs. Then it becomes necessary to introduce liquid into the circulation by administering water through mouth or rectum. Never is the common sense and tact of the intelligent practitioner more thoroughly taxed. In regard to that there can be no law. No printed rule ever supplies or substitutes brains.\*

In chronic cases boiled milk must form but a small part of the food. The white of eggs in water, or barley- or rice-water, is superior. Still, there are exceptional cases in which even it is not tolerated. Then the cereal and farinaceous preparations, with or without mutton-broth, are preferable. In rare cases one of the better artificial foods is quite successful. Acorn coffee, acorn cocoa, answer well when given once or twice daily. The meals must be small, and may be more numerous, but a fair regularity must be kept up.

CONSTIPATION may have many causes. The intestinal mucus may be deficient or too viscid. Such is the case in febrile conditions, now and then in chronic intestinal catarrh, and also when there is too much perspiration and secretion of urine. Or the food may be inappropriate, as when it contains a superabundance of casein, particularly in cow's milk, or of starch, or too few salts, or of sugar.

Peristalsis may be incomplete through rhachitic debility of the muscular layer, or the muscular weakness dependent upon sedentary habits, chronic peritonitis, intestinal atrophy, and hydrocephalus.

There is, also, beside mechanical obstruction by cystic

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\* Med. News, July 9, 1887.



tumors, intussusceptions, volvulus, and imperforations, an apparent constipation which ought not to be mistaken for any of the above varieties. Now and then a child will appear to be constipated, have a movement every two or three days, and at the same time the amount of fæces discharged is very small. This apparent constipation is seen in very young infants rather than in those of more advanced age. Such children are emaciated, sometimes atrophic. They appear to be constipated because of lack of food, and not infrequently this apparent constipation is soon relieved by a sufficient amount of nutriment. Constipation resulting from a superabundance of starch in the food is easily cured by the withdrawal of the injurious substance.

Constipation produced by too much casein in the food will be relieved by diminishing its quantity. The proportion of casein in the food of infants should never be more than one per cent. Besides, this amount of casein ought to be copiously mixed with a glutinous decoction (oatmeal).

Infants that have been fed on starchy food, or even such cereals as barley, should have oatmeal substituted for it.

Constipation depending on lack of sugar is very often speedily relieved by increasing the quantity of sugar in the food. This is the case not only in artificial feeding, but also when the children are fed normally on breast-milk. Such mother's milk as is white and dense, and contains a large amount of casein, is made more digestible, and will produce better evacuations, when a piece of loaf-sugar dissolved in tepid water, or oatmeal-water, is given previously to every nursing. Older children will take honey to advantage, as long as it does not add to the abnormal gastric acids. Regular doses of cod-liver oil, given twice or three times daily, will obviate or relieve constipation, besides fulfilling other indications. But it is self-understood that it must be pure, and not adulterated by the fashionable admixture of phosphate of calcium. Children of more advanced age, and with good gastric digestion, will be benefited by breads containing husk. Children of any age will be benefited by drinking large quantities of water.

RHACHITIS is frequently the result of protracted intestinal

disorders. Therefore proper feeding is an absolute necessity. Animal food must predominate, but meat ought to be lean. The so-called erethic disposition requires less meat, but more of the better class of farinaceous foods,—viz., barley and oat-meal, with boiled milk, and salt. The same indications are valid for all the conditions subsumed under the head of scrofula. Coarse bread, acidulated food, fruit not absolutely ripe, must be avoided.\* The introduction of phosphates, in whatever shape, is a mistake, for the following reasons:

In the careful experiments of Foster, who fed infants on milk, it was found that the mineral constituents were absorbed least (still less than fat). Of the ashes of milk in general, there were in the fæces 36.5 per cent.; of the calcium in particular, seventy-five per cent. In spite of that the baby thrived, and increased in weight in one week one hundred and seventy grammes. Thus there appears to be but very little need of salts on the part of the growing baby. The infant of two and a half years receives in one day 1.25 grammes of calcium, of which there is an elimination of 0.92 gramme in the fæces and 0.03 in the urine. There is then a balance of 0.3 gramme in a day, of 2.1 in a week, of a kilogramme, or two pounds of calcium, in a year. This is all that is utilized.

Almost the entire quantity of calcium in the body is deposited in the bones, which contain eleven per cent. of calcium in the adult, and in the infant and child somewhat less.

There are some very important practical points connected with the results of these observations.

As long as the food contains plenty of calcium and phosphoric acid there is certainly no indication for the introduction of the same in the form of medicine, or as an addition to food, for the purpose of improving nutrition. Thus the *combination of cod-liver oil with phosphate of lime*, which has become so fashionable, is *based upon an illusion* concerning its alleged efficiency. Besides, the empirical observation has been made also, at a very early time, that immediately after the adminis-

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\* Loose bowels behave well under the influence of acorn coffee (containing gallic acid), or acorn cocoa, as introduced into practice by Michaelis, of Berlin.

tration of preparations of calcium there was increased elimination through both the fæces and the urine.

Thus, as there is no actual absence of calcium phosphate in the food, the organism should be spared useless labor. In occasional cases, where the effect appears to be favorable, this very effect is different from what was intended. When rachitical or anæmic infants are supplied with phosphate of lime, and iron, bismuth, etc., they are generally patients who are suffering from primary or secondary catarrh of the stomach, with superabundance of acid in its secretion. In these very cases the calcium phosphate acts as an antacid, inasmuch as phosphoric acid becomes free and the lime neutralizes the acids of the digestive organs.

FEVER consumes nitrogen (elimination of urea), carbon, water, and also salts. These losses must be repaired, but with great care. For fever diminishes at the same time the secretion of saliva, and of gastric, probably also that of the pancreatic juice. Besides, it renders the stomach hyperæsthetic (nausea, vomiting), and impairs the absorbing power of all the mucous membranes. In the capillary bronchitis of the nursing, cow's milk is not digested satisfactorily. Still, nurslings will digest fairly sometimes, and lose less flesh in many of their febrile ailments than older children. A fair amount of peptones is absorbed both in the stomach and rectum. In moderate fevers some sugar is absorbed, also albumin; fat in but small quantities, because of its tendency to become acid; starch finds its saliva more or less diminished; thus its amount must be carefully estimated.

Food, when given in an undue quantity, may act injuriously by acting as a mechanical irritation, and by giving rise to fermentation. Can it thus increase the fever? Undoubtedly. I have but lately seen a child sick with pain and fever who recovered rapidly through the effect of a purgative, which brought away large masses of fæces. Another had what appeared to be a second relapse of typhoid fever, with a renewal of splenic tumefaction. All the symptoms vanished speedily when the bowels were thoroughly emptied of large offensive stools.

In ordinary fevers the food must be liquid, and rather cool, in vomiting cold, in respiratory diseases warm, in collapse hot.



The best feeding-time is the remission; in intermittent fevers nothing must be given during the attack except water, or acidulated water; in septic fevers nothing during a chill. Common ephemeral catarrhal fevers may do without food (except water) for a reasonable time. Sleep must not be disturbed, except in conditions of sepsis and depressed brain action. In both there is no sound sleep, but sopor, which may be interrupted. In sepsis (diphtheria and other) this rousing from sopor is an absolute necessity. Unless they are roused frequently to be fed sufficiently, and stimulated freely, the patients will die. Besides, in most of the cases, the temperatures are not high, and there is no contraindication to feeding on that account.

Chronic inflammatory fevers bear and require feeding as generous as it must be careful. Altogether, however, it requires the good judgment of a well-informed physician to take into account the possible influences of individual habits, and energies, of ages and sexes, of constitutions, and of climate and season.

TYPHOID FEVER is of long duration, its temperature is sometimes quite high in children, as it is in adults. The small intestines are affected principally. Thus, not only is, after the first few days, a considerable amount of food required, but it must be so chosen as to be digestible in the stomach; its proper selection is the more important the more the latter organ is impaired by high temperatures. Beside plenty of water, or acidulated water (hydrochloric, no organic, acid), albuminoids are indicated. Milk and cereals (in decoctions, which must be strained) are the proper foods. The administration of stimulants, both as to quantity and to time, depends on the character of the individual case, and the power of resistance on the part of the patient, beside the condition of the heart. Where the latter becomes feeble at an early period, beside heart-stimulants (digitalis, spartein, caffein, camphor), alcoholic stimulants are required. Diarrhœa demands (beside opium, naphthalin) albumin, rice-water, arrow-root, mutton-broth. Hemorrhage forbids food in any shape for a time, the duration of which depends on the general condition of the patient. At no time during the disease, and during the first ten days of fully estab-



lished convalescence, the food must ever be solid. No vegetables must be allowed until three weeks have elapsed since the beginning of apyrexia. When the milk and cereal food become distasteful, a change in their preparation, as described above, will and must suffice. The large majority of relapses are due to a dereliction in the strict rules of feeding.

The diet in other chronic or acute diseases is regulated by the general rules which have been laid down before. Thus, a few words may suffice.

HEREDITARY SYPHILIS contraindicates the employment of a wet-nurse. The infant's own mother may nurse it if she can.

CEREBRAL DISEASES contraindicate alcohol, coffee, hot soups, and solid foods. Cerebro-spinal meningitis results in speedy loss of weight and strength, particularly through severe and protracted vomiting, and the greatly-impaired appetite. In these cases feeding must be insisted upon. The feeding-cup, Soltmann's biberon pompe, and feeding through the nose (no tube into the œsophagus) must be resorted to.

RESPIRATORY DISEASES require liquid food. Jurgensen's recommendation of roast, and bread with butter, is objectionable in every acute inflammatory case. Food and drink must not be too cold. Sugar, and sweets in general, are permissible in small quantities only. Farinaceous foods are the most reliable ones. In the beginning no alcoholic stimulants. They will be required when debility and collapse set in at an early time, or in protracted cases. Capillary bronchitis is often complicated with gastro-enteritis, and then no milk can be allowed; sometimes not even breast-milk is digested.

ACUTE RENAL DISEASES contraindicate alcohol in any shape, particularly beer; also spices, coffee, and tea. CHRONIC RENAL DISEASES require generous feeding, because of the copious loss of albumin. But—contrary to Oertel and Loewenmayer—no eggs or meats ought to be given in any quantity, or at an early period. Milk and farinacea must take their places. Alcohol is permissible in urgent cases only. Salt must be avoided except when the secretion of urine is to be fostered. It ought not to be forgotten that appetite and digestion may be suffering from the fact that the tissue of the

stomach is cedematous, like all the rest of the organs. This is another reason why eggs and meats ought to be avoided. If required, in the later stages, peptones may take their place.

ACUTE RHEUMATISM requires milk diet and vegetable acids (lemonade), as long and at such times as they do not interfere with the milk food.

#### RECTAL ALIMENTATION.

The rectum absorbs, but it does not digest. Whatever, therefore, is to enter the circulation through the lower end of the alimentary canal must be dissolved before being injected. Suspension alone does not usually suffice. Water can be introduced in quantities of from twenty-five to one hundred grammes (one to three ounces) every one, two, or three hours, and may thus save life by adding to the contents of the thirsty lymphducts and empty blood-vessels. Salts in a mild solution will thus be absorbed. Food must be more or less peptonized before being injected. The peptones mentioned above are readily absorbed when fairly diluted. When too thick they are not absorbed, become putrid, and a source of irritation. Milk ought to be peptonized. The white of eggs becomes absorbable through the addition of some chloride of sodium. Kussmaul beats two or three eggs with water, keeps the mixture through twelve hours, and injects it with some starch decoction. The latter is partly changed into dextrin. Fat, when mixed with alcohol, becomes apt to be partly absorbed. Andrew H. Smith recommends the injection of blood. Its soluble albumin, salts, and water are readily absorbed; more we ought not to expect. Still, he has observed that the evacuations of the next day contained none of the injected blood. Whatever we do, however, and be the rectum ever so tolerant, not more than one-fourth part of the food required for sustaining life can be obtained by rectal injections, and inanition will follow, though it be greatly delayed. Finally, children are not so favorably situated in regard to nutritious enemata as adults. In these the lengthening of the nozzle of the syringe by means of an elastic catheter permits of the introduction of a large quantity of liquid; indeed, a pint can be injected, and will be retained. But the great normal length of the sigmoid flexure

in the infant and child, which results in its being bent upon itself, prevents the introduction of an instrument to a considerable height. It will bend upon itself; besides, a large amount of contents will be expelled by the feeble or resisting young patient.\* When a solid instrument is used, it is apt to be felt high up in the abdomen. This is the result of a large portion of the intestine being pushed upwards with the tube.

(To be continued.)

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## ON VENEREAL AND GENITO-URINARY DISEASES OF CHILDREN.

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(Continued from January Number.)

### II.—SYPHILITIC AFFECTIONS OF THE SKIN AND ITS APPENDAGES.

IN the first paper I passed in review the causes which produced syphilis in infants, whether originating from paternal or maternal influences alone, or from both, when due to hereditary causes, and if acquired, how obtained. In this paper I propose to consider the symptoms of the skin which appear in the new-born: whether they come on at birth or not until some time has elapsed after birth; the condition known as syphilis hereditaria tarda; and the affections of the nails and hair met with in congenital syphilis.

The first question which arises is, How soon can the physician expect to see the indications of inherited disease, immediately at birth or after, and, if the latter, how soon after?

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\* The amount can be somewhat increased by raising the baby by its feet, while the chest and abdomen are supported by a soft pillow, and injecting quite slowly, or, rather, allowing the liquid to flow in from above downwards. Gentle manipulation of the abdomen, while the procedure is going on, will aid our purpose.

At one time the belief was current that syphilis occurred at birth or within a few days subsequently, but further investigation showed that while this was true in the large proportion of cases, there were many instances in which the manifestations of syphilis were delayed for several months. Thus Roger, in the *Union Médicale* for 1865, collated two hundred and forty-nine cases from these several sources :

	Cases.
Diday.....	158
De Méric.....	28
Mayr.....	49
Roger.....	14
	<hr/> 249

In one hundred and seventeen out of these two hundred and forty-nine cases syphilis appeared before the end of the third month, and in thirty-two it came later.

Sifting these cases still closer, it will be seen that although a very large percentage occurred early in extra-uterine life, there still remain some cases in which the manifestations of the inherited disease were delayed long beyond the usual three months. Thus in Diday's cases ("Syphilis des nouveau-nés") syphilis appeared—

	Cases.
Before the first month in.....	86
"    "    second "    ".....	45
"    "    third "    ".....	15
At    "    fourth "    ".....	7
"    "    fifth "    ".....	1
"    "    sixth "    ".....	1
"    "    eighth "    ".....	1
"    "    first year "    ".....	1
"    "    second "    ".....	1
	<hr/> 158

Of these one hundred and fifty-eight cases, syphilis broke out in one hundred and forty-six before the end of the third month, leaving twelve cases in which the outbreak of the disease was delayed until later. Taking these one hundred and forty-six cases in which syphilis appeared before the expiration of the third month, it is found that eighty-six of them took place before the end of the first month and one hundred and thirty-one before the end of the first two months.



Twelve cases are left in which no signs of syphilis had appeared up to the end of the third month, and of these, ten presented evidences of disease before the expiration of the first twelve months of extra-uterine life. Two only are left in which the disease is still further delayed.

The same author gives another series of one hundred and five cases, in forty-five of which symptoms appeared before the end of thirty days after birth, and of these forty-five cases twenty-four were attacked before the end of fifteen days, and of these twenty-four, ten before the end of the eighth day.

De Méric, in the *Lancet* for 1858, gives the result of twenty-eight cases in which the date can be assigned for the appearance of syphilitic manifestations. Of these twenty-eight cases syphilis appeared in—

- Two cases, a few hours after birth.
- Four “ one to ten days after birth.
- Five “ ten days to three weeks after birth.
- Ten “ six to thirteen weeks after birth.
- One case, thirteen months after birth.
- “ “ fourteen months after birth.
- “ “ twenty-one months after birth.
- “ “ twenty-seven months after birth.
- “ “ eight years after birth.
- “ “ twelve months after birth.
- “ “ fifteen months after birth.

It will be seen that twenty-one out of the twenty-eight cases occur within the first three months, and only seven after that period, agreeing pretty closely with the results of Diday's experience. It may, therefore, be stated that the larger percentage of cases of inherited syphilis appear at or before the end of the first three months of extra-uterine life.

Luzinsky, in the *Wiener Medicinische Zeitung* for 1884, gives as the result of his experience the following statement: “It is seldom that syphilitic manifestations show themselves earlier than the sixth week, or later than the third month. In fifty-three per cent. of the cases they occurred between the sixth and eighth week after birth, and in only sixteen per cent. did they occur after the third month.”

It is very evident that the majority of cases present manifestations within the first three months, but a small number of

cases are said to occur several years after birth without having shown any symptoms prior to that time. This is contrary to the generally-received opinion, which assigns one year as the outside limit at which symptoms could possibly occur, and if none appeared within that period, that the child might be considered as exempt from any chance of showing subsequent manifestations. Indeed, Diday assigns a much shorter period, for he says "that when the third month is once past, there is no longer much probability that any symptoms of the kind will manifest themselves" (*op. cit.*).

Is it possible, then, that syphilis may be latent for several years without showing symptoms during the early period of the child's life? I confess that I do not think it is. The time at which this late outbreak generally occurs is about the age of puberty, a period at which inherited syphilis is prone to show itself. It must be borne in mind that there are three periods of the life of a person, the subject of inherited syphilis, in which the disease is likely to crop out: at birth, at puberty, and at the close of middle life. If a child is born apparently perfectly healthy—and many a syphilitic child is so born—the early manifestations are apt to be slight and to escape attention, or to be ascribed to other causes. These symptoms will in time often disappear by themselves, leaving no trace behind, and when the child later on, at the age of ten, twelve, or fourteen years of age, presents symptoms which are unquestionably syphilitic, it is believed that they are the first manifestations, and the case is heralded as one of those instances of infantile syphilis which has been delayed for several years. These are the cases which the older writers described under the name of "struma." Sometimes the surgeon is fortunate enough to discover traces of interstitial keratitis, of scars about the angles of the mouth, of Hutchinson's teeth, of an old iritis, or an arrest of development, which at once serves to notify him that earlier trouble has existed, notwithstanding the statement of previous immunity. Sometimes, however, he discovers nothing, and is thrown back on his own resources to settle the truth of the patient's statement. One circumstance will serve him as a guide,—to wit, the character of the lesions under observation. They are always, so far as my ex-

perience goes, those pertaining to the late forms of syphilis, those classed under the time-honored name of tertiary syphilis. Throwing aside for the nonce the cases of children who are so profoundly poisoned by syphilis that they show at birth symptoms of an advanced stage of the disease, inherited syphilis displays much the same course which the acquired variety does: it follows a pretty regular gradation from the lighter to the more severe stages. If, then, patients of thirteen or fourteen years of age present themselves to the surgeon with periostitis, an ulceration of the palate, or ulcerating serpiginous lesions of the skin, which he is satisfied come from inherited syphilis, he can predicate previous milder manifestations of the disease as certainly as the paleontologist will predicate the existence of an extinct fauna from the imprints which they have left behind them on rocks and sandstone, although he has never seen the animals himself. *Ex pede Herculem*; syphilis often leaves its story so plainly written that he who runs may read, and although the earlier symptoms may have come and gone and left no trace behind, when the late syphilides appear one may be sure that previous symptoms have existed. I hope I shall not be considered as doubting the existence of syphilis hereditaria tarda, for I do not. What I do not believe is that inherited syphilis remains latent for several years before declaring itself. That I do not accept, and the reported cases have not as yet convinced me to the contrary.

Durac in his thèse ("De l'Hérédité de la Syphilis") quotes Ricord as saying that he has seen the symptoms of hereditary syphilis make their first appearance after an incubation of ten, twenty, or more years. This was stated at the *séance* of L'Académie de Médecine of October 8, 1853, "qu'il a vu des sujets chez qui la verole héréditaire ne s'est manifesté qu'à l'âge de quarante ans." This statement I have not been able to verify, but it is, if true, an extraordinary one.

Quesada ("La Syphilis congéniale") records three cases of inherited syphilis in which the symptoms first manifested themselves at the ages of three years, two years, and six months respectively. The space allotted to these papers prevents me from giving the cases in detail, and it would be useless to do



so, as there is not the slightest evidence to support the view of inherited syphilis in any of them.

Robert ("Maladies vénériennes") gives the history of two cases, in one of which the patient was sixty-five, in the other forty-two years of age, and in whom no other symptoms had made their appearance. The first one is open to extreme doubt as to its syphilitic character, the other may have been a case of syphilis, probably was, but in which, notwithstanding the morality of the patient and the absence of all history, the question of an acquired syphilis is not at all beyond doubt. The two cases are not convincing and do not, to my mind, prove anything.

Gréssant ("La Syphilis héréditaire tardive") gives a case of Dumesnil, in which the patient was aged seventeen years when he came under observation for symptoms of syphilis; but in this boy there were evidences to show that he had manifestations of his disease in early life.

Augagneur ("Étude sur la Syphilis héréditaire tardive") gives the history of two cases, one of which is personal, the other is communicated by M. Horand. In the first one the symptoms (periostitis of the tibiæ and cephalalgia) commenced when he was twenty-six years of age, and were finally cured by the iodide of potassium. His mother had been syphilitic, and he was born five years after his mother's infection. Although it is stated that he had not had any symptoms of inherited disease, nor had he acquired syphilis, it is very unlikely that with these antecedents he should have gone through twenty-six years of his life without showing some of the earlier symptoms which would naturally leave no traces of their presence.

In the second case there was found a retino-choroiditis, with a central corneal opacity, which was probably the result of ocular trouble in his infancy; and if so, to what so likely due as to syphilis?

Fournier, in the *Gazette Hébdomadaire de Paris*, gives the history of a man in whom the symptoms appeared in his thirty-first year, but previous manifestations had occurred in early life. The case is as follows:

X., ætate thirty, presented himself to M. Fournier with lesions which were evidently gummous ulcerations of the



penis. He denied absolutely and in the most emphatic manner that he had ever acquired syphilis. On examining the patient further, Fournier found that he had a bilateral cophosis which had existed since infancy, evidences of an old keratitis, and lesions of a serious affection of the knee-joint. Dr. Hermet examined the patient's ears, and reported that on the right side the watch was heard at ten centimetres only. The tympanum was misshapen, thickened, and presented disseminated fibrous bands across it. There was then no perforation, but such had probably existed formerly. The ossicles were partially ankylosed.

The left ear could only hear the watch on contact. There was a perforation of the upper segment of the tympanum on a line with the handle of the malleus.

The keratitis had come on when the patient was fourteen years of age, had lasted for several months, and was very serious, making him almost blind. The traces of this affection were still apparent.

One of the knees showed a notable deformity, with cicatricial bridges, a slight retraction of the leg, limitation of movement, and pronounced lameness. About the articulation cicatrices of varying size and dimensions existed, evidences of periosteal abscesses and cutaneous ulcerations.

The patient had strenuously denied having acquired syphilis at any time, and it was only when he believed Fournier suspected syphilis that he stated that he thought it was of hereditary origin, and said his family doctor could give a clue to the correct cause of his present trouble. On referring to this gentleman, the following condition of things came to light:

1. That the patient's mother, when *enceinte* with him, had acquired syphilis from her husband.

2. That the patient, shortly after birth, showed various syphilitic symptoms, which were treated as such by the doctor; that he was puny and brought up with much difficulty; that at the age of two years he showed the affection of the knee described above, which was chronic in its course and of a serious nature, attended with multiple abscesses about the joint, exfoliation of bone, adhesions of the joint, peripheric ulcera-

tions; all of which finally yielded to protracted treatment with the iodide of potassium.

3. That he infected the nurse who suckled him with syphilis.

The patient recovered from the ulcerations of his penis under the use of the iodide of potassium, iodoform, and baths.

The case is particularly instructive as showing that symptoms of inherited syphilis do occur later in life during the adult period; but it is also worthy of note that although at the time these lesions occur they are single and of such character that they might not be referred to their true cause, if the surgeon be on his guard and is a careful diagnostician he will probably find traces of previous troubles which will put him on the right track and enable him to give a correct opinion of the case. Just such an instance occurred in a history reported by Bulkley in the *Archives of Dermatology* for 1878.

The lesions of the skin occurring in children who are the subjects of inherited syphilis vary in form and intensity, dependent upon how soon they appear after birth. The congenital type is apt to be the most severe; that is, where the symptoms are present at the time the child is born, and milder when the lesions do not come on until some months after birth. Sometimes the fœtus is cast off before the full term with macerated epithelium and evidences of profound alteration of the skin. At other times the child is carried to the full term and is born with pemphigus, in which the epidermis is raised over the entire body (in the form of bullæ), which is readily stripped off, leaving a red excoriated surface beneath. Again, the child is born with a papulo-pustular eruption of the body, especially of the palms of the hands and soles of the feet, which desquamates and shows slight ulcerations beneath. But many syphilitic children come into the world apparently sound and healthy, and remain so for several months after birth, showing as the first evidence of their disease a macular or a papular syphilide of the skin. In those cases where the poisoning is profound and in which the child is born with a pemphigus or with a pustular syphilide, the mucous membranes are affected in a similar manner to the skin. The epithelium is stripped

off from the buccal cavity and from the throat, leaving the subepithelial surfaces raw and denuded. If the child is born alive, there is frequently found a bulging of the forehead (hydrocephalus), excoriations about the angles of the mouth and about the anus; the respiration is impeded by lesions in the throat and in the mucous membrane of the nasal cavities; the voice is altered in volume and sound, the cry is stridulous and hoarse; the child is pale and wizened, having the appearance of premature age, and the body lacks the plumpness of infancy. Associated with this is an obstinate diarrhœa, dependent upon lesions of the intestinal mucous membrane. At the autopsy, the viscera are found to be profoundly altered, and are frequently the seat of infiltrations referable to an advanced stage of syphilis.

But as has already been stated, the new-born child may present all the appearances of good health. The body is full and well nourished; the color is normal; the functions of the body well performed; the cry is that of a child in good condition; there is no snuffling nor any bulging of the forehead; in short, there is nothing to denote that the child is the victim of syphilis. But after a few months the child's appetite begins to fail; it no longer suckles as well as formerly, nor does it seek the teat with its previous avidity; the cry is observed to become harsh and squeaking; it does not sleep as well nor as soundly as it should, and it is peevish and irritable. With this condition of things, either simultaneously or soon after, an eruption is seen over the child's entire body, invading the face and thighs notably, which is often overlooked, or, if noticed, is ascribed to other causes. At the same time the mouth is observed to be sore and to interfere with nursing. If carefully inspected the mucous membrane is seen to be the seat of opaline spots, slightly raised above the surface of the tissues and seated in the subepithelial layer. This is the lesion so often called "sprue" by nurses. The eruption commences in the form of macules of the skin, which are not raised above the surface of the integument, of a shade varying from pink to a bright red, easily effaced on pressure, but returning as soon as the pressure is removed, desquamating rapidly, and from the heat and moisture incidental to a baby's skin quickly



losing their epithelial layer. Especially is this the case in the folds of skin about the infant's neck and its genitals, where they assume the appearance of the moist-secreting papule of the acquired variety and constituting mucous patches of the skin. Under treatment these macules rapidly disappear, the child resumes its former healthy appearance, the functions are properly carried on, and the child seems to get over its trouble. This improvement is deceptive, for in a short time the child presents evidences of a new eruption or else (this more rarely) the macules return. If the disease is progressing, the next outbreak of the skin occurs after an intermission varying from a fortnight to four or five weeks, usually the earlier period, in which the child's body shows a papular eruption, seated principally on the buttocks, the face, the palms of the hand, and the soles of the feet. This rash is elevated above the surface of the skin, does not readily disappear on pressure, each papule is crowned at its apex with fine scales, the papules themselves being of the acuminate variety, closely grouped together and seated upon a reddish, elevated base. The grouping of each patch is circinate, with sound skin in the centre; sometimes the circular form is not complete, and the groups present irregular shapes. The tendency of these patches is to coalesce when their character changes from the single papules closely crowded together to broad papules which desquamate abundantly, which are prone to crack and become fissured, and when seated at the angles of the child's mouth are a constant source of pain every time it opens its mouth. This variety is most commonly met with on the palms and soles and at the angles of the mouth; they bleed readily on the slightest motion of the skin covering these parts, and are very obstinate and rebellious to treatment.

Another form of eruption which has been described is the vesicular syphilide, which first appears somewhat as does the miliary variety of papule, except that the papule instead of desquamating at its apex becomes vesicular. This variety I have never seen myself, and, while not denying its possibility of occurrence, I am somewhat inclined to think that a vesicular eczema has been confounded for a syphilide.

The miliary papular eruption, although not particularly ob-



stinate, does not disappear as readily as does the macular variety; it is slower in being absorbed, and leaves a stain behind which lasts for some little time after the eruption proper has gone. The lenticular, the broad kind, on the other hand, is very slow in going; it is rebellious to any but the most energetic treatment, and is quite prone to relapse. The infiltration of the submucous layer is oftentimes extensive and tenacious, and is the dividing-line between the preceding mild lesions and those of the later or more advanced type. For it must be borne in mind that the manifestations of the hereditary late variety are essentially those of the late ulcerating kind, the so-called tertiary stage of the acquired type, and betoken an advanced condition of the disease. These lesions are true gummous deposits, and are often exceedingly destructive in their course.

In the majority of cases at this stage of the disease, oftentimes before, the child recovers from any active manifestation of syphilis for a time, provided the treatment has been efficient and prompt. This period of exemption may last for two or more years, until the age of five or six years is reached, when a relapse of the papular syphilide takes place, or else the next step is taken in the onward course of the disease,—viz., the pustular variety. In this paper I am considering only the lesions of the skin, and am not drawing a picture of the other intercurrent symptoms of this period, such as the lesions of the eye, of the bones, etc. Those I leave for future consideration. But to return to the pustular eruption. This variety is most frequently to be seen about the face, the hairy scalp, the soles of the feet, the palms of the hands, and the legs. They begin as small nodules beneath the surface of the skin, which quickly become raised above the surface, and are filled with pus, which dries in the form of scabs, and these, becoming detached, leave an ulcerated surface beneath. When they make their appearance they denote a tendency towards the development of the later lesions, and betoken an outbreak at the age of puberty, even if the child survive the present attack.

These are the symptoms which occur upon the skin during the early stage of infantile syphilis, but there is one variety to which I shall call attention later on,—viz., the kind known as the hemorrhagic variety. Before describing that, let us

study the eruptions which take place during the stage known as the syphilis hereditaria tarda. We now arrive at the late stage, or the period known as tertiary, where the lesions begin in the deeper layers of the skin and cellular tissue, and are gummous in their nature. These are the type so often spoken of and written about as syphilitic lupus, especially among the older writers,—a most unfortunate name. They are not so widely diffused over the body as the lesions just described, but are usually confined to certain portions. Fournier, in the *Annales de Dermatologie et de Syphiligraphie* for 1886, gives the seat of the lesions in fifty-three cases:

- In twenty-eight cases they occurred on the face.
- “ one case they occurred on the hairy scalp.
- “ twenty-seven cases they occurred on the leg.
- “ five cases they occurred on the buttocks.
- “ two cases they occurred on the foot.
- “ five cases they occurred on the arm.
- “ four cases they occurred on the forearm.
- “ three cases they occurred on the hands.
- “ six cases they occurred on the trunk.
- “ one case they occurred on the neck.
- “ one case they occurred on the breast.
- “ three cases they occurred on the thighs.
- “ four cases they occurred on the penis.
- “ three cases they occurred on the vulva.
- “ one case they occurred on the pourtour of the anus.

Although it is seen that these lesions are found upon all portions of the body, there seem to be certain portions where they are more frequently met with than upon others. The face is the especial seat of predilection, after that the legs; and Fournier calls attention to the fact that it is the anterior portion of the leg which is most frequently attacked. When upon the face, he says the nose, and to that I should add the cheeks, for, so far as my experience goes, the cheeks are often as frequently attacked as the nose, either concomitantly or alone. Fournier, however, says that the nose is the seat of predilection, and that out of twenty-eight cases where the face was attacked the nose was the favorite seat in eighteen, and was severely attacked. They are the cases so often considered as lupus, and reported as cases of lupus cured by the use of the iodide of potassium.

The progress and advent of these lesions is worthy of note as coming on slowly and insidiously, without pain or any premonitory symptoms. They begin as a tubercle or group of tubercles, deeply seated in the cellular tissue, which break down, often after lasting for a long time, and present either the aspect of an open ulceration or else are covered with an adherent crust, which, when removed, shows deep ulceration underneath. These ulcerations extend in a serpiginous manner, healing at one point and extending in another, and refuse to heal up under the usual methods of treatment directed towards the cure of a lupus or rodent ulcer. Iodide of potassium is the only thing which seems to be of benefit. The course of these lesions is essentially a slow one. When they heal, they always leave a cicatrix behind them, which is depressed beneath the surface of the surrounding tissues and is easily recognizable as due to syphilis.

One other variety remains to be described, the one which has been described by many authors (Smith, Jenkins, Von Bärensprung, Epstein, Ritter, Petersen, *et alii*) under the name of "Syphilis hemorrhagica neonatorum." This variety of eruption usually occurs early in the life of the child, often at birth, or very shortly after, and is associated with other evidences of profound poisoning from syphilis. It may be accompanied by pemphigus, in which cases the bullæ are filled with a bloody serum, or it appears as hemorrhagic effusions beneath the skin. These may occur as isolated points or as a diffuse purpura, and are accompanied by bleeding from the umbilicus, hemorrhage from the nose or mouth, and bloody stools, due to hemorrhage from the intestines. Associated with these lesions gummous infiltrations of the viscera—*i.e.*, of the liver, spleen, and lungs—are found upon autopsy. The infant succumbs under the loss of blood and the depressing effect of the syphilis.

Mracek, in the *Berliner Klin. Wochenschrift* for 1886, gives the history of nineteen cases of this kind in which all the children died at periods varying from half an hour to forty-eight hours. On autopsy, vascular lesions were found in the viscera, with sanguineous effusions.

Richards, in the *Indian Medical Gazette* for 1884, records a



case of gangrene of the forearm and hand occurring as the result of hereditary syphilis; but I am sorry to say that I have not been able to secure a copy of the journal in which the report appeared, and hence I can say nothing about it *in extenso*.

Zantiotis, in the *Gazette Hebdomadaire de Médecine de Paris*, gives the account of two cases of subcutaneous phlegmona as resulting from hereditary syphilis which are very interesting.

The child was born on the 15th June, 1885. On the 2d July it broke out with an eruption of pustules, and at the same time the left arm became red and swollen. On the 5th July, at the lower and internal aspect of the arm, near the articulation of the elbow, an abscess formed, which broke spontaneously.

On the 6th July Zantiotis saw the child. Its physical condition was fair. There was an ulcer the size of a two-franc piece at the site of the abscess; the epitrochlear process was laid bare, but was not carious, and pus flowed from the undermined integuments. On the body were vesicles, papules, pustules, and tubercles, but none on the face or ears.

On the 8th July a second brachial abscess appeared, which was opened, and gave vent to laudable pus. From that date on fifty abscesses, varying in size, broke out over the body and head, which repeatedly recurred, and were finally cured, as were the cutaneous lesions, by antisyphilitic treatment. The parents denied having had syphilis.

The second case was similar to the one just given, except that it terminated fatally, and, unfortunately, no autopsy could be obtained.

Onychia in inherited syphilis appears in two ways: the first, early in the course of the disease, consists in an inflammation of the matrix, associated with the early cutaneous lesions about the nail, and rarely becomes pustular. The second occurs later on, and is a genuine ulceration of the matrix of the nail; or it may begin at the side of the nail, which is altered in texture, becomes raised from its bed, and is destroyed. Sometimes this process is repeated several times before a new nail is finally reproduced, which is often of irregular growth and misshapen. Another singular affection of the nail is of the dry



variety, and is described by Van Harlingen in the *Philadelphia Medical News* for 1883, in which the nails of the fingers and toes were implicated. The case was that of an infant, the subject of congenital syphilis, in whom, when three weeks old, "the nails began to show a yellow discoloration in the centre and to take on an arched shape, as if shrinking together from the side. The nails of the feet were affected first, later those of the hands.

"Examination showed the nails of both fingers and toes to be alike affected, being partly curled in on their lateral edge until they occupied less than one-half, or scarcely even one-third, of the entire width of the nail-bed. Growing out some little distance beyond the ends of the fingers and toes, the nails bent over in a claw-like shape, so as to resemble the claws of a dog or other animal, a resemblance made stronger by the dark, brownish discoloration of the nails.

"The surface of the contracted portion was furrowed with fine transverse markings, while the proximal portion of the nail-bed from which it sprang was thrown up into rugous folds. The nail-bed alongside of the contracted nail was somewhat roughened and slightly brownish. The diseased nails were not thickened, and were not in any way misshaped, except for the perfectly uniform changes just described, which involved all the nails in precisely the same manner."

Diday, in his work, "*Syphilis des nouveau-nés*," quotes Guérard, *Journal de Siebold*, t. x., as saying: "I have seen in a new born-child affected with syphilis the nails of the hands and feet gradually become atrophied, grow longer and narrower in appearance, and fall off at last to make way for more healthy nails, which underwent the same process; and this happened three times in succession before really sound nails remained."

Alopecia is another affection of the appendages of the skin which occurs in the newly-born syphilitic child, and is of two kinds: the one which takes place early in extra-uterine life, the other with the manifestations of the late variety. The first kind is general, attacking the hair of the head and the eyebrows, which are scanty and readily fall out, leaving the child bereft of hair, or else the hair fails to grow as readily as

it should. The second variety is either complete, or, as is most frequently the case, confined to certain portions of the head occupying the fronto-parietal regions, showing itself in bands more or less extensive in the antero-posterior direction. It is seldom seen on the vertex, either frontal or occipital. In all cases the eyebrows are scanty, sometimes entirely wanting. This form of alopecia is sometimes attended by an epithelial pigmentation. Mercurial treatment will arrest the progress of the baldness, but it will not renew the growth of hair. The seat and extent of the baldness distinguish it from other forms of alopecia which occur in children.

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(To be continued.)

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## THE DIPHTHEROID THROATS.

BY SOLOMON SOLIS-COHEN, A.M., M.D.,

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THE diphtheroid throats (herpetic sore throat, common membranous sore throat, drain-throat, mycotic sore throat) are of importance, not so much for what they are as for what they are not. They are not diphtheria. Yet they are often diagnosticated as diphtheria; and recovery ensuing during the administration of the latest therapeutic fad, another is added to the list of vaunted cures, and the statistician enlarges his tables by a further increment of erroneous observations.

The ease with which the diphtheroid throat may usually be discriminated from lacunar tonsillitis, adds to the liability of error; for uninstructed observers are thus confirmed in their opinion that the palatal, tonsillar, or pharyngeal deposit is evidence of diphtheria. Although the condition is well recognized, and carefully described in the best special text-books, yet in many prominent text-books on practice of medicine and on diseases of children, which I have consulted for the purpose, I have failed to find either distinct recognition or satisfactory description: though in some, a word or two of caution in connection with the diagnosis of diphtheria shows

a vague consciousness of the facts; which are not, however, either prominently or correctly stated.

The object of this paper is neither to bring forth anything new nor to offer an elaborate bibliography, but to aid in the dissemination of old knowledge, not always kept in mind, and not generally taught. I recall, for example, being told some two or three years ago, by an educated and skilful professional contemporary, of his wonderful success in a series of cases of diphtheria with the local use of a recently-introduced drug, which he had resorted to as a palliative, but which, to his surprise, proved curative. As the occurrence was not in an isolated case, but in a group of cases, he felt sure it was more than a coincidence, though he could offer no explanation. A suggestion that he might have been dealing with acute herpetic sore throat elicited a confession that he had never heard of the disease. He looked up the notes he had taken of the lectures on practice, and found no mention therein of anything that might have warned him against error, except in the case of follicular (or, better, lacunar) tonsillitis. Subsequent experience of the inutility of the same drug against genuine diphtheria convinced my friend that his first observations were cases of mistaken diagnosis. This is but one of many illustrations that might be cited, of the negative importance of a knowledge of the diphtheroid throats; and I have chosen this name, in order to emphasize at once the facts that there are many forms of throat-affection which resemble that of diphtheria, deriving from this resemblance a certain importance, and that the resemblance is in appearance only, not in essential character.

Da Costa\* describes an "*ulcero-membranous angina*," which, "though kindred to diphtheria, and in isolated instances perhaps difficult to discriminate, differs from it in its seat and in its want of tendency to spread, in the formation of superficial ulcers, in its less marked constitutional depression, and in its invariably favorable termination;" and adds, "Whether there be not also other kinds of membranous sore throat to be

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\* "Medical Diagnosis," Philadelphia, 1881, p. 431; see also Amer. Jour. Med. Sci., July, 1870.



separated from true diphtheria, is a matter requiring further investigation."

The diphtheroid throats are grouped together by J. Solis-Cohen\* under the name of *common membranous sore throat*, which name he also uses synonymously with *herpetic sore throat*, or *herpes pharyngis*. The only description of *mycotic sore throat* in a text-book is given by this author, in Pepper's "System of Medicine."† Bosworth‡ uses *membranous sore throat* and *croupous pharyngitis* as synonymes, and distinguishes as *herpes of the pharynx*§ an affection which is not characterized by a membranous exudation, and has but little in common with the affection described by Trousseau and others under the same name.

Sir Morell Mackenzie|| describes as *herpes of the pharynx*, essentially the same affection originating in herpetic vesicles, and sometimes accompanied by labial and cutaneous herpes, as that to which J. Solis-Cohen gives the name of common membranous sore throat in preference.

On comparing Cohen's description with Mackenzie's, however, it will be seen that the former includes manifestations not referred to by the latter; and from my own personal observations of cases and their diagnosis, in the practice of the former author, since confirmed in my own practice, I am inclined to divide the common forms of *diphtheroid throat* (the *common membranous sore throat* of Cohen) into three varieties; one of which corresponds to the *herpes* of Trousseau and Mackenzie (and probably Da Costa's *ulcero-membranous angina*); one may properly claim the name of *membranous* (or *croupous*, as distinguished from catarrhal) *sore throat*; and one may be, for want of a better term, included under the same nosological appellation, but is more forcibly characterized by the term which Cohen applies, not in his book, but in his own practice, of "*drain-throat*;" a term at once expressive of the etiology of

\* "Sore Throat," Philadelphia, 1874; "Diseases of the Throat," New York, 1879, p. 103.

† Vol. ii., Philadelphia, 1885, p. 386.

‡ "Diseases of the Throat," New York, 1881, p. 107.

§ Op. cit., p. 162.

|| "Diseases of the Throat," vol. i., London, 1880.



this form of *septic sore throat*, and indicative of one source of the popular ideas concerning the relations of diphtheria to drains. In addition to these more ordinary varieties, *acute mycotic sore throat*, of which the single case placed on record in this country was reported by me,\* sometimes simulates diphtheria. The membranous sore throats which follow sedulous attendance upon scarlatina and diphtheria may be alluded to, but I am not prepared to express an opinion as to their specific or non-specific character. I used to think that I could determine whether the cases which I watched after tracheotomy were croup or diphtheria by the effect upon my own throat,—*nil* in the former case, and septic ulceration, with exudation, in the latter. Latterly, even undoubted diphtheria no longer affects me.

In practice, however, these distinctions may be disregarded. The only really important point is to remember that there are in addition to lacunar tonsillitis, varieties of sore throat, characterized by a pseudo-membranous deposit, which are not diphtheritic in character; and the diagnosis may be confined to the negative one, “non-diphtheritic sore throat,” without any breach of duty.

The diphtheroid throats agree, in the main, in the following characteristics:

1. There is intense pain in swallowing, usually confined to one side, and often extending towards the ear on the same side. The pain is nearly constant, for the excessive production of saliva necessitates frequent movements of deglutition. This is usually the first cause of complaint; and, if the throat be inspected at once, nothing may be seen, except a slight congestion of one or other tonsil or palatine arch.

2. When the characteristic manifestations in the throat appear, they are usually one-sided. One tonsil is most frequently the seat of exudation. The gland is sometimes completely ensheathed, but more often there are irregularly round or oval patches of whitish, grayish, or yellowish membrane, varying in size from that of a pin's head to that of a dime. Not infrequently there is but a single patch. In addition to the ton-

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\* The Polyclinic, Philadelphia, March, 1884.

sillar patches, sometimes without coexisting tonsillar patches, similar appearances may often be seen on the soft palate, uvula, or palatine folds; more rarely on the posterior pharyngeal wall, and exceptionally on the hard palate. If the false membrane be wiped off with a piece of sponge or cotton wad, a procedure which may require a little force, an eroded and sometimes bleeding surface will be exposed beneath.

3. There is rarely any enlargement of the cervical or sub-maxillary glands. If there be enlargement, it is inconsiderable. The glands at the angle of the jaw on the side affected are often, however, very sensitive to pressure.

4. The disease is not contagious.

5. Recovery is almost invariable. In rare cases, it is stated by Cohen,\* extension of the pseudo-membrane into the air-passages of children may cause a fatal termination.

Having stated, for convenience of study, the most constant points of agreement, let us hastily review the less constant manifestations, and the points of disagreement between the main varieties, for doubtless other varieties could be separated did we seek a more accurate and refined classification.

Constitutional disturbances may be present or absent, mild or severe. In children, they seem to be invariably present, and, as a rule, much more severe than in adults. In the average case, an initial chill, succeeded by febrile reaction, is accompanied or quickly followed by the ordinary local manifestations of sore throat, and the characteristic pseudo-membrane appears from twenty-four to seventy-two or more hours later. Constitutional symptoms more frequently accompany the herpetic and croupous varieties than the drain-throat. When fever accompanies the drain-throat it is usually of a low type; there is considerable depression. The other varieties are as a rule not marked by depression.

In membranous sore throat the tonsil is usually swollen and inflamed. In drain-throat it may be congested or locally inflamed, but not usually swollen as a whole. In herpes it is usually swollen, often inflamed, but sometimes escapes altogether.

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\* Op. cit., p. 105.

In membranous sore throat the exudation quickly appears, and often rapidly spreads, frequently appearing on the pharynx, sometimes attacking the previously healthy side as it disappears from the side first affected. In herpes, though the initial manifestations are rarely seen, yet they may sometimes be detected as minute (papules, soon followed by ?) vesicles, upon the soft palate, uvula, or palatine folds; sometimes widely distributed, sometimes in close groups, which coalesce into patches when the vesicles have ruptured and the little ulcers thus formed have become covered with fibrinous exudation.\* The patches are more regular in their rounded or oval outline at first, than are the patches of the other varieties, though sometimes several patches coalesce, forming a veritable sheath to the structure—uvula, palatine fold, or tonsil—on which they may be situated.

I once saw in a colored woman to whom I was called in consultation as to a case of diphtheria, the second stage of herpes beautifully marked. The vesicles had ruptured and the little circular ulcers were covered with exudation, but many of those on the palate preserved their regular outline, and in some cases their isolation. On the tonsil were little ovoid groups of separate circular ulcers (not plugged follicles and caseous matter, as in lacunar tonsillitis), but in one place coalescence into an oval patch had already taken place. When I saw the patient again, a few hours later, the tonsil was completely ensheathed, and had I not seen the previous condition I would have entertained grave doubts concerning the correctness of a non-diphtheritic diagnosis. The subsequent history of the case, however, was that of acute herpes, and not of diphtheria.

In the drain-throat one or two scattered shallow ulcers, usually oval in shape, and with the long axis more nearly vertical than horizontal, are covered with a grayish pultaceous deposit. The seat varies. The tonsil, uvula, and posterior palatine fold are most usually affected.

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\* Sometimes the herpetic vesicles disappear without trace, the membranous deposit is not formed, and the case does not enter the category of diphtheroid throats. Observation of this variety probably occasioned Bosworth's erroneously restricted description of herpes.



I am not aware of any conclusive researches as to the pathology of the diphtheroid throat. I believe that the herpetic processes—papule (?), vesicle, rupture, ulcer, exudation, coalescence, healing beneath exudation—essentially represent that which goes on in all the varieties ; though in the others there appears (from clinical observations only, however) to be a more generalized (if we can use the word in referring to a circumscribed process) turbidity of epithelium within the affected area, followed by a process of desquamation rather than of necrosis, and this by fibrinous exudation as the first stage of repair. The essential difference, however, between the diphtheroid and the diphtheritic necrosis—if we use the term—is the shallowness and the circumscription of the former.

The diagnosis, as will be apparent from what has been said, is usually very easy. The question is simply “diphtheria or not?” The points of difference from diphtheria have already been given. The absence of albuminuria is another general, though not invariable, sign. In herpes the coincidence of eruption on lips, face, or elsewhere, may assist discrimination. Sometimes, when the constitutional symptoms are pronounced, the exudation more widespread than usual, occupying the pharyngeal wall, or appearing simultaneously on both tonsils, the discrimination is difficult. So, in a case of benign mycotic sore throat (*pharyngo-mycosis leptothricia* [Hering]) attended with febrile disturbance, the extreme tenacity of the fungoid deposit and its obstinate recurrence after forcible removal, might induce the belief that we were dealing with diphtheria, until the subsequent history of the case on the one hand, or the microscopic examination of the parasitic growth on the other hand, should reveal the true nature of the affection. A knowledge of our patient's idiosyncrasies will sometimes assist us ; as in one case of my own, where I have attended the same boy, now twelve years old, for four successive annual attacks of acute herpes of the throat, each in the month of February. I have seen no other case of such exact periodicity, but cases of annual, or even semi-annual, recurrence at particular seasons—spring or fall, usually—are not uncommon. It must not be forgotten, however, that when diphtheria is epidemically



prevalent, a diphtheroid throat may predispose to the graver malady. This fact, indeed, may serve us in an *ex post facto* diagnosis, as in a case seen by me in consultation last year, in which both the attending physician and I were inclined, in view of the epidemic then existing, to consider it diphtheria, from the great constitutional disturbance (high fever, depression, tendency to delirium), the extent of the deposit, and the enlargement of the glands at the angles of the jaw. A sister of the patient, sleeping in the same room, had an attack at the same time, the course of which proved it undoubtedly nothing but herpes. It is scarcely probable that exposed as this child was to the poison, she would have escaped diphtheria had that really been the nature of the brother's illness. It must be admitted, however, that "when diphtheria is prevalent the diagnosis is difficult."

Treatment depends upon the ease of diagnosis. If in doubt, the case should be isolated and treated as one of diphtheria. The patient will recover in any event, and this course can do no harm, if the physician is chary about drawing conclusions as to the value of new remedies in the therapeusis of the graver disease, and still more circumspect as to printing the conclusions he may have formed, until they have been tested in a future epidemic. Mild cases need no treatment. Some patients requiring treatment need not be confined to bed, or even to their room.

Local distress, especially in deglutition, is the worst feature of the case. This may sometimes be relieved by drawing down the lobe of the ear on the affected side, which probably relaxes the tension of the palatine folds. Sometimes a solution of cocaine may be applied by brush, sponge, or spray, or cocaine in glycerin be slowly swallowed, so as to bathe the parts. A gargle of guaiacum and honey may be employed, as in tonsillitis. The following formula, long in use in the Southern and Western States, gives a good preparation: "To three or four fluidrachms of ammoniated tincture of guaiacum and two fluidrachms of compound tincture of cinchona, add six fluidrachms of clarified honey. Shake well, till the sides of the containing vessel are coated. Add slowly, stirring meanwhile, a solution of potassium chlorate (sixty to eighty grains)

in enough water to make four fluidounces." From two to four fluidrachms are used as a gargle at intervals varying from half an hour to two hours. It is sometimes given internally in appropriate doses. I have often substituted sodium salicylate for the potassium chlorate. The addition of cocaine or of the concentrated infusion of erythroxyton has at times seemed to be beneficial. When gargling is not practicable, and cocaine is inefficient, or an idiosyncrasy prevents its use, lozenges of guaiacum, or of some sedative (opium, conium), may be used, or the parts be pencilled with solutions of aconite or of morphine, or with two-per-cent. oleate of morphine or oleate of aconitine. Inhalations of the vapor of warm water, simple, aromatized or charged with some astringent or sedative medicament, such as watery solutions of tannin, hyoscyamus, opium, conium, etc., may be resorted to, or the spray of a steam atomizer, or of Oliver's atomizer, may be charged with some appropriate sedative. If necessary, opiates may be administered internally, or even hypodermatically, though this will hardly ever be required.

If the physician desires to resort to antiseptic medication, a suitable agent, such as carbolic acid, eucalyptol, terebene, or oil of gaultheria, may be added to the gargle, lozenge, vapor, or spray. Labarraque's solution, alcoholic solution of thymol, solution of hydrogen dioxide, solution of potassium permanganate, solution of ferric chloride, solution of mercuric chloride, are among the best agents when active local treatment is thought necessary, and may be applied directly to the affected parts by brush, sponge, or cotton wad. In one case, I successfully circumscribed the process by furrowing the tonsil just outside the margins of the exudation by a shallow groove cut with the galvano-caustic point. The solid stick of nitrate of silver is sometimes employed for a similar purpose. Trypsin or papoid may be used as in diphtheria. Those who prefer insufflation of powders may resort to iodoform, iodol, boric acid, or sublimated sulphur. When the diagnosis is clear, however, and diphtheria or scarlet fever is not prevalent, all such measures are best omitted.

Internal medication is rarely necessary. When required, tincture of chloride of iron, Fowler's solution of arsenic, qui-

nine, or other antipyretic, or, in case of doubt as to diphtheria, calomel or corrosive sublimate, may be administered.

In almost any case it will assist matters to begin with a laxative; and calomel, or mercury and chalk, with perhaps a fractional dose of Dover's powder, will usually be among the preferable agents, especially with children.

A liquid diet is usually a matter of necessity. It should be as nourishing as possible, and alcohol may be employed from the first, if marked depression exists, or if diphtheria is feared. Demulcent drinks are often very soothing. Warm soups, warm milk, hot coffee, will usually be swallowed with less pain than cold liquids; though ice-cream is sometimes refreshing, and little bits of ice allowed to melt in the mouth from time to time may relieve pain when medication fails. Which will prove more soothing in any individual case, heat or cold, can be determined only by experiment. As to external applications, hot cloths to the neck and back of the ear are usually most agreeable.

The duration of the attack varies from two or three days to a week or ten days.

The drain-throat (septic sore throat) is sometimes well within twenty-four hours.

When a case is prolonged, the supervention of phagedenic sore throat is to be guarded against by appropriate measures. I have not met with this complication, but authors speak of it.\*

Herpes sometimes manifests a tendency to chronicity or successive recurrences, but these cases being usually unattended with febrile symptoms, having vesicular manifestations more or less clearly exhibited, and being well known to the patient as of non-malignant character, have, like the cases of chronic mycosis, passed out of the category of diphtheroid throats.

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\* J. Solis-Cohen, op. cit., p. 106.

PRELIMINARY NOTE IN REGARD TO THE  
VALUE OF HYDROGEN PEROXIDE AS A  
LOCAL APPLICATION IN DIPHTHERIA.

BY MARCUS P. HATFIELD, M.D.,

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HOWEVER authorities may differ in regard to the essential nature of diphtheria, practical physicians will readily appreciate the value in many of their cases of efficient local treatment. That certain cases of diphtheria recover without this is no better argument against the topical use of remedies than can be brought against antiseptics elsewhere. There is to the mind of the writer no better reason for allowing putrid, sloughing material to remain in the throat than in the uterus. Its unskilful removal from either locality may be fraught with danger and do more injury than good, nevertheless the physician who allows his patient to die of uterine septicæmia is justly held responsible for the death if he makes no effort to wash away the putrefying substances from the womb. Similar blame in the future we believe will attach to the physician who neglects the careful disinfection of the diphtheritic throat, troublesome and inefficient as such efforts often are. "Only the strongest determination and belief in the value of such means," says Goodhart, writing on this subject, "will enable the physician to persevere; . . . but that treatment will, I believe, be in the long run most successful which, while doing everything possible to support the child, is ever on the alert to combat the formation of membrane."

With him we also believe that of local measures antiseptics are to be preferred to escharotics. Hydrochloric acid, phenol, the actual cautery, perchloride of iron, iodine, and a host of other caustic remedies have rightly fallen into disuse, for in diphtheria *primum non nocere* is an excellent rule, to say nothing of the pain inflicted by such applications. Our search, then, should be for some antiseptic for the purpose, which must



be not only efficient and not hurtful to the sound tissues, but as far as possible painless in its application. Such a substance we believe can be found in a well-prepared solution of hydrogen peroxide in water or glycerin.

Hydrogen peroxide ( $\text{H}_2\text{O}_2$ ) in its gaseous state cannot be conveniently prepared at the bedside; nor would it then be of as easy application as its aqueous or glycerin solutions. The first of these, commercial hydrogen dioxide, contains 2.88 volumes of the gas, and, if properly prepared, is a perfectly clear, colorless fluid, specific gravity 1010–11, without odor and without any taste, but leaves a faint sensation similar to that of a solution of carbonic acid upon the tongue. Such a solution is neither escharotic, caustic, nor astringent in its action upon either healthy or diseased tissues, but nevertheless it has been proven one of the most efficient of known antiseptics, for Miguel places it third (.05 gramme to the litre being sufficient to prevent the growth of bacterial life in beef solutions) in his list of sporicides.

In short, we have in a solution of hydrogen peroxide a bland, harmless, but nevertheless an exceedingly efficient antiseptic,—far more so than either carbolic acid, alcohol, salicylic or boracic acid. It neither stains, corrodes, nor injures sound tissues, and would seem to be on theoretical grounds the ideal antiseptic for local use. Dentists and surgeons have found it most useful in old fistulæ and small pus-cavities, and the writer believes it of equal value as a local application to diphtheritic membranes. It is equivalent to placing them in an atmosphere of nascent oxygen, without other after-effects from the solution than those which follow the application of pure water, for the efficiency of hydrogen dioxide is due to its setting free oxygen when brought in contact with dead matter, which is thus oxidized and its pus-cells and bacteria, if it contains any, destroyed, at the same time  $\text{H}_2\text{O}_2$  being changed to  $\text{H}_2\text{O}$ , or ordinary water. Such is the theory of the action of peroxide of hydrogen in these cases. Now, do the facts corroborate the theories?

As far as personal experience goes, they do. During the past few weeks eighteen cases of diphtheria of varying intensity from very grave to light have been treated with hydrogen

peroxide, and have given eighteen gratifying recoveries. The number of these cases is yet too small to draw general conclusions, but they have proven to the writer that in hydrogen peroxide we have an agent that is exceedingly valuable as a local disinfectant, when efficiently applied either by means of a swab or in the form of a spray (two ounces diluted with seven times its bulk of water). Diphtheritic throats treated thus every two hours did not become, even in the worst of the eighteen cases under observation, putrid and offensive, as they inevitably do if left to their own devices. Hydrogen peroxide does not act as a solvent upon the diphtheritic membranes, but rather as its disinfectant and antidote, nor does it prevent the formation for, but neutralizes the poison of, the diphtheritic exudate, and thus anticipates many of the sequelæ of this dread disease. The remedy is certainly worthy of more extended trial in malignant diphtheria.

[The peroxide used in these cases was that prepared by Messrs. E. H. Sargent of this city, was kept in the dark when not in use, and at a temperature below 65° F. That which fails to effervesce with pus, or to bleach an ordinary cork, is inert and valueless.]

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## Current Literature.

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### I.—HYGIENE AND THERAPEUTICS.

Anderson: One of the Conditions of the First Inspiration, and of the Position of the Head in New-Born Infants. (*Jour. de Méd.*, August 21, 1887.)

The first entrance of atmospheric air into the trachea of an infant at birth is an aspiration due to the inspiratory dilatation of the thorax. Not only the trachea and the larynx, but the pharynx, the nose, and the cavity of the mouth of the fœtus are completely closed to the air, and no aspiration could act upon any of these organs. Under ordinary circumstances the head of the fœtus *in utero* is strongly inclined forward. The tongue fills the entire buccal cavity, and its dorsum is in apposition with the soft and the hard palates in such a way that the uvula lies in the angle formed by the epiglottis and the root of the tongue. The soft palate occupies the immedi-

ate vicinity of the posterior border of the septum of the nares in a line with the hard palate. The larynx is situated high up under the base of the skull, and the larynx and trachea are flattened from front to rear. In case of a normal *accouchement*, as the head emerges its relations to the trunk become changed. At first its longitudinal axis straightens and then becomes strongly curved backward. Then there is a decided extension of the fore-part, which includes the larynx, the trachea, the tongue, and the parts which unite them. The immediate result of the extension of these elastic structures is that the tongue is retracted, which enables the air to enter the mouth. Then the root of the tongue and the larynx may be lowered, permitting the entrance of air into the orifice of the larynx. As the larynx is lowered the velum is lowered also, and at the same time there is a relaxation of the muscles which unite the different parts of these structures. These muscles are attached to the posterior part of the thyroid cartilage, and as they relax the air enters the larynx. As the trachea elongates its calibre is diminished. The cartilages upon the front of this structure cause the diminution to act more particularly upon its back part, the front part being therefore bowed inward as a result. A column of air is thus introduced into the lower part of the trachea, upon which an aspiration can act as soon as the inspiratory dilatation of the thorax has taken place. The author does not deny that the muscular contractions contribute partly to this process, but their work is unessential, for he has observed, that air can penetrate into the trachea of still-born infants. After respiration has commenced the infant, if vigorous, holds his head backward for some time. This is important for the free passage of air along the air-passages before they have acquired full capacity and before the cartilages have gained consistency in their new position. This posture of the head should not be prevented by a false position, especially in the case of weak infants, who are unable to make the requisite change themselves. For such it may sometimes be necessary to adjust the head in accordance with the foregoing principles. A. F. C.

Bond and Edwards: *Cannabis Indica* in *Diarrhoea*. (*Practitioner* [London], July.)

Attention has lately been called to the value of this drug in dysentery. The writers of the article referred to have extended its use to cases of summer diarrhoea, and claim for it excellent results. The cases where most benefit was obtained were those with frequent watery stools, vomiting, cramps, and great depression.



All food was withheld for several hours and only brandy and water given.

The following is the formula used :

R Tinct. cannabis indicæ, ℥ x ;  
 Liq. morphinæ, ℥ v-x ;  
 Spts. ammo. arom.,  
 Spts. chloroformi, āā ℥ xx ;  
 Aqua, ad ℥i.

Give every one, two, or three hours. The above is an adult dose.

*Cannabis indica* is claimed to counteract the "bilious action" of morphine and to aid rather than retard the return to healthy digestion.

Handford: Arsenical Pigmentation of the Skin where Arsenic was Administered for Pemphigus. (*Brit. Med. Jour.*, October 22, 1887.)

The patient was a girl of thirteen. The arsenic was given as Fowler's solution, the dose being ℥ xv three times daily; this was continued for ten weeks. The skin of the whole body was then noticed to be dry, brawny, and darkened. The axillæ, groins, and abdomen were almost as dark as in Addison's disease.

The arsenic was stopped and the patient treated by wet packs, and in a month the skin had its normal feeling and appearance, and much of the pigmentation was gone.

Russell: Teething. Is it a Common Cause of Disorder? (*Albany Med. Annals*, July, 1887.)

In the author's opinion teething may occasionally cause some disturbance, but it is the exception and not the rule. He thinks if a disease is to be considered as a consequence of teething, it must not simply now and then coincide with the cutting of a tooth, but the coincidence should be exact as to time, and repeated, if not with every tooth, at least frequently. As our knowledge of the causes of disease in children has increased, the importance of teething as a cause has decreased. The chief difficulty arises from ascribing to teething disorders due to other causes.

Fowler: Note on the Value of Calomel in Certain Diseases of Children. (*Med. Rec.*, November 19, 1887.)

In the author's experience calomel is a very valuable agent in certain affections common to children. In diarrhœas, from whatever cause, calomel is given in one-sixth-grain doses, combined with bicarbonate of soda and sugar, repeated every



half-hour, until one-half or one grain, according to the age of the child, has been administered, and in most cases the symptoms are relieved. The diet is to be regulated, and it may be necessary, after the bowels have moved several times as a result of the medicine, to administer small doses of Dover's powder. In all the common derangements of digestion he gives calomel in minute doses twice a week until the bowels are uniformly loose. Then he reduces frequency of dose and stops it in about three weeks. For peevishness, fretfulness, anorexia, accompanied or not with slight fever, he thinks calomel is the remedy. For intestinal worms he uses nothing but this agent. In dropsical conditions he deems it safer and more active than digitalis and acetate of potash. In pneumonias of children, where there is danger from œdema of the lung or suffocation from accumulated mucus, he has seen calomel demonstrate its diuretic and absorbent powers by relieving these conditions. In the treatment of diphtheria he relies mainly upon calomel and whiskey. Small doses, one-sixth to one-third of a grain or more, according to indications, are given every hour.

Greenley: *Maternal Impressions on the Fœtus.* (*Am. Pract. and News*, October 29, 1887.)

The writer reports eight cases of foetal abnormalities coincidental with maternal impressions, and refers to some striking instances observed in the practice of others.

CASE I.—Mrs. D., during early part of pregnancy, was shocked by seeing a man with one arm. Was impressed with the idea that her child would be deformed. Child had stump projecting from right shoulder with thumb and fingers, which when grown was about four inches long.

CASE II.—Mrs. B., in first months of gestation, saw two bulls fighting, which greatly alarmed her. Her child's head presented somewhat the appearance of this animal.

CASE III.—Mrs. S., shocked by accidentally placing her hand on a piece of raw beef. Child marked on corresponding hand with spot having appearance of raw beef.

CASE IV.—The mother of M. on going into a menagerie saw a bear and was alarmed at its efforts to get loose. Child had large space on upper part of back covered with hair simulating coat of bear.

CASE V.—S. M. has couple of marks on left breast resembling sweet potatoes. His mother regarded marks as being due to her great desire to eat sweet potatoes when sick during her pregnancy, but which were withheld although in her sight.

CASE VI.—Mrs. B. saw a raccoon during her gestation, which frightened her. Her child had a deformed hand resembling foot of raccoon.

CASE VII.—Mrs. L. was very much alarmed at meeting a drunken man who was reeling and falling about. Her child was not physically deformed, but he never walked except with a similar staggering and reeling gait and with frequent falling. He is now forty years old and still walks like a drunken man.

CASE VIII.—The mother of this child, now sixteen years old, was frightened by a fish which was thrown down at her feet without warning. The child's skin presents all the appearances of that of a fish. The scales are plainly developed, —very much like those of a buffalo-fish.

Stintzing: Hereditary Ataxia. (*Rev. Mens. des Mal. de l'Enf.* [abstracted], October, 1887.)

A family living in the neighborhood of Munich showed the following remarkable history. The father was sixty-seven years of age, in good health, and had never experienced any serious disease of a neuropathic or other character. The mother was fifty-three years of age, and also had no significant personal or family antecedents. She was not related by blood to her husband's family. They had had seven children, one of whom died in childhood. Of the others, the first was a daughter, thirty-two years of age. She has complete paralysis of motion and sensation in the extremities; at the level of the arms sensation is preserved, but motion is very limited. The reflexes at the knees are abolished, there is no muscular atrophy, and most of the muscles of the trunk are paralyzed. There is nystagmus and also loss of voice. There are cardiac palpitations and irregular contractions. Sight and hearing are feeble. The bladder is normal. The disease began at the age of five years. At the time this history was taken the gait was staggering.

The second child was a son, who died at the age of thirty-one years. He had shown the same symptoms as his sister.

The third was a boy twenty-eight years of age. His health appeared to be good, but he was impotent.

The fourth was a boy nineteen years of age, who stammered badly.

The fifth was a girl of fifteen. Friedreich's disease began with her at the age of nine years, the symptoms being weakness and progressively imperfect use of the arms and legs. Nystagmus was evident, the pulse was accelerated, and there was motor inco-ordination at the level of the superior extremities. She had trouble in holding herself straight, especially

if her eyes were closed, her gait was ataxic, there was inco-ordination of isolated movements at the level of the lower extremities, and loss of the patellar reflexes; the sensibility was entirely normal.

The sixth had symptoms similar to the fifth, though less accentuated.

There were thus in four of these children in one family marked evidences of locomotor ataxia.

A. F. C.

Campbell; *Causes and Means for Preventing Infantile Diarrhœa*. (*Gaz. Med. di Roma* [abstracted], September 15, 1887.)

The author's statements are based largely upon statistics published since 1872. The mortality reports of the principal cities of the United States and Europe show that the deaths among children in general bear a direct ratio to the number of births.

During the years 1881-86 the mortality from diarrhœa among children between the ages of one and four years was 24.5 per cent. of the total mortality for that period of life. The importance of this disease warrants particular study of its etiology, which may be carried out under the following headings:

(1) *Causes of Development*.—The first year of life may be considered a predisposing cause on account of the peculiarly sensitive condition of the digestive organs. The mortality during this period is seventy-three per cent., and males are more susceptible than females in the ratio of one hundred and fifteen to one hundred.

(2) *Social Causes*.—The poor, the illegitimate, and the children of the working classes suffer much more from this disease than those in the opposite conditions. Geographical position does not seem to have any bearing, *per se*, upon this question.

(3) *Causes of a Meteorological Character*.—The months during which the disease prevailed most extensively were August, September, July, October, June, and in that order. Epidemics prevail during the warmest months, and the mortality increases during foggy weather, when the ozone of the atmosphere is diminished, and when the velocity of the wind is not uniform.

(4) *Hygienic Causes*.—The number of victims is greater in the city than in the country. Children who live on high ground in the cities, where there is good water and sewerage, are less prone to the disease than those who live under the opposite hygienic conditions. The three hypotheses as to the



cause of diarrhœa which are now considered most probable are the chemical, the microbic, and the ptomainic.

(5) *Dietetic Causes.*—Improper diet, especially milk of a poor quality, is the chief cause of this disease. Mother's milk is, of course, the most suitable for the nourishment of infants, unless it should continue to excite diarrhœa a number of days after birth. Cow's milk is unsuitable for children's use when the cow's udders are affected with any form of inflammation, and also when the food-supply of the animals is deficient. Mare's milk is a very good substitute for human milk, but it is difficult to procure it. The use of fruits for children gives rise to gastric disorders and predisposes to diarrhœa.

The following preventive measures are suggested:

Unusual care for very young infants, especially for boys.

Suitable places of protection for illegitimate children.

Better hygienic conditions among the laboring classes.

Watchfulness and extra precautions during humid weather, and in times of sudden atmospheric changes.

Suitable means of hydrotherapy should be adopted, baths being given during the hottest portion of the day, but not, as a rule, in the morning or the evening.

Woollen coverings should be worn over the abdomen to protect the digestive organs from changes of temperature.

All filth should be removed from dwellings and suitably disposed of.

Sewers and drains should be abundantly flushed with water.

Mothers should suckle their infants when possible at least for nine or ten months.

Infants should not be weaned between the months of May and October.

Cow's milk should be boiled before it is used.

Cows should be inspected by health officers, and also the food which is given to them.

During the first months of life only milk should be used for those who are not fed at the breast, with the possible addition of a small quantity of starchy food.

Meat and fruits should not be given until the child is three years old.

During hot weather fruit should not be given to children, as a rule.

When one is attacked with diarrhœa the physician should insist upon the disinfection of the dejecta with a one-per-cent. solution of lactic acid, or a solution of sublimate of suitable strength.

A. F. C.



## II.—MEDICINE.

Escherich: The Micro-Organisms of Scarlet Fever. (*Centr. f. Kinderh.*, August 20, 1887.)

The history of the investigation of germs in connection with scarlet fever began with Hallier in 1869, who found the fungus *Tilletia scarlatiosa* in blood taken from three children who had this disease, and recognized in it the cause of the disease. Tschamer made a similar discovery, in 1879, in the blood, urine, fæces, and scales of epidermis of scarlet-fever patients, the micrococcus having the form of *Verticillium candelabrum*, which is found in rotten wood. Cleft spores (Spaltpilze), in the limited sense of the word, were first described by Coze and Feltz, in 1872, as bacteria .0006 millimetre long occurring in the blood of scarlet-fever subjects. Subcutaneous injection of these in puppies produced a fatal disease, which was transmissible by inoculation to other animals. In 1875, Klebs cultivated *Monas scarlatinosum* from the inguinal gland of a scarlatinal subject, and Eklund, in 1881, announced the discovery of small round forms which he found in the urine of scarlatinal patients, and also in soil-water in the walls of dwellings, and these forms, under the name *Plax scindeus*, he regarded as the medium for the transmission of scarlatina. In 1883, Stickler reported a disease resembling scarlet fever in horses, and that inoculation with mucus from the nose of those which were suffering from this disease would confer immunity upon human beings thus inoculated. Babes subsequently reported the results of his experiments in inoculating a colt with matter obtained from a scarlet-fever patient. Klebs, on the other hand, asserts that no germs have yet been discovered which belong exclusively to the scarlet-fever process, and that the microbes which have been found in different organs by investigators are the result of so-called secondary infection. Jamieson and Alexander have very recently published the results of their clinical and microscopical investigations upon this subject. Their assumption was that the danger of infection existed only when the contagium, having traversed the blood and the tissues, reached the skin, being thrown off during the process of desquamation with the scales of epidermis. In order to destroy the infective agent, they recommended that the patient be placed in a warm bath every evening after the process of desquamation had begun, and that the entire body be anointed twice daily with carbolized vaseline. Neither the arguments nor the recorded cases of these authors are convincing to the author of this paper, for experience in children's hospitals furnishes many illustrations that a short stay of a patient with a suspicious angina or a

beginning exanthema is sufficient to cause an outbreak of skin-disease in connection with scarlatina in every form. The methods of bacteriological investigation pursued by these authors were not such as to meet unqualified approval, and one is therefore not surprised to find as a result only a series of eight different varieties of cocci and bacilli, of which only three require special attention, they alone showing virulence when animals were inoculated with them. The judgment which the author pronounces upon this work is unfavorable. Clement Dukes reports that he has found a specific for scarlet fever in the iodide of mercury, and that if it is given at the beginning of the disease it may so completely abort it by its antiseptic force that there will be no desquamation at all, or only a slight grade of it.

A. F. C.

**Hartley: Some Points on Rickets.** (*Brit. Med. Journal*, November 26, 1887.)

In a paper read at the Cambridge Medical Society the writer stated that rickets was nearly as common among the agricultural laborers in some parts of England as among the poor in towns. The type of the disease was, however, usually milder. The diet of country babies consisted of herring, haddock, cheese, bacon, and the staple food,—pap. This consisted of a mess of sour white bread and warm water, washed down, up to two years old, with breast-milk, whenever the child cried loudly enough to be a nuisance; a wedge of turnip or sour apple being used to keep the infant quiet between meals. These factors were regarded as very important in the development of rickets. Little attention was usually paid to the slighter forms of rickets, yet one could not help feeling that the flat feet, inadequate legs, and springless gait of the laborers in many parts of England might be—partly, at least—due to bygone rickets.

One troublesome feature in the treatment was the scarcity of good cow's milk.

Opium was favored as lessening peristalsis, and thus permitting a better absorption of intestinal contents and also checking the excessive pouring out of mucus, which was a source of great trouble itself.

**A New Whooping-Cough Bacillus.** (*Lancet*, December 3, 1887.)

Dr. Afanasieff has succeeded in finding what he believes to be the true germ of the disease. The microbe is peculiar,—it resembles somewhat Friedländer's pneumococcus, but is shorter and thinner. Furthermore, it differs by not forming nail-

shaped cultures in gelatin. It has no hemispherical head. Its potato-cultures are also different.

It exhibits remarkable vitality: gelatin-cultures long dry are still capable of starting fresh growths.

The researches were made upon the physician's own children, who were affected with whooping-cough. The mouth was well washed with a permanganate solution, and the next mucus coughed up was subjected to examination. In this, after staining with methyl-violet, and in the pus-corpuscles also, the bacilli could be seen, with a power of seven hundred to one thousand, as short rods, sometimes single, sometimes in twos, sometimes in clusters, and again in short chains running in the direction of the mucus. Their length was from  $0.6\ \mu$  to  $2.2\ \mu$ . Pure cultures were easily made upon agar-agar, meat, peptone, jelly, and potato.

Inoculations were made in dogs and rabbits with the cultures, some by means of injection into the trachea, others directly into the lung. All the animals were seriously sick, and many died. The symptoms somewhat resembled whooping-cough, and were dyspnoea, cough, and redness of the eyes. In some broncho-pneumonia developed as a complication.

The autopsies showed redness of the mucous membranes of the air-passages and production of clear mucus, in which, as well as in pneumonic patches, the bacilli were found. Similar bacilli were found in the bodies of children who had died from whooping-cough.

The success which has attended the use of quinine and other substances in the nasal passages has been due, the writer thinks, to their action in destroying bacilli.

Perroncito and Carita: The Transmission of Hydrophobia from the Mother to her Offspring through the Media of the Placenta and the Milk. (*Centr. f. Kinderh.* [abstracted], August 20, 1887.)

A young bitch inoculated with the poison of hydrophobia gave birth to a litter of four pups before the symptoms of the disease appeared. Other animals were inoculated with a portion of the cervical spinal cords removed from two of the pups. The animals which were inoculated from one of the pups remained well, while those from the other developed the typical phenomena of hydrophobia. The conclusion from these facts is not only that the disease can be transmitted from the mother to the fœtus, but that individual fœtuses may be infected by the same source which is without that power over other individuals. A female guinea-pig was inoculated with the virus of rabies just before parturition. The offspring were appar-



ently healthy and were all suckled by the mother. On the sixth and seventh days after inoculation the mother began to show the first symptoms of rabies, to which she succumbed four days later. Her young ones, who had showed only slight evidences of the existence of the disease, died on the same day, and guinea-pigs and puppies which were inoculated with matter from the cervical portion of their spinal cords developed typical rabies. The conclusion was that in this case the disease was propagated through the medium of the mother's milk.

A. F. C.

Bardach: The Virus of Rabies in the Milk. (*Centr. f. Kinderh.* [from Annals of the Pasteur Institute, 1887], August 20, 1887.)

The milk from a nursing woman who had been bitten by a rabid wolf was injected under the cerebral cortex in puppies and guinea-pigs, and resulted in the development of typical rabies in all of them. The woman continued to nurse her child after the disease manifested itself in her; she died, but her child remained unaffected.

These and other experiments have shown that the poison of rabies is not only in the central nervous system, but in the glandular apparatus as well, especially in the salivary and lachrymal glands, and in the pancreas. It is also present in the mammary glands during lactation. Two hares were inoculated with blood from the heart of a young bitch which had died from rabies, and in which at the time of death lactation had just begun; two others were inoculated with its milk, which had been carefully expressed; and one other with milk which had been mixed with portions of the tissue of the mammary gland. The last died with symptoms typical of rabies, the others remained well. Experiments by Nocard showed that milk obtained from three rabid animals was capable of propagating the disease in two of the cases, but not in the third. The poison seems ever to be in very small quantity in the milk, and hence the possibility of the propagation of the disease by this means varies in different cases.

A. F. C.

Ollivier: Hydrophobia in Children. (*Rev. Mens. des Mal. de l'Enf.*, October, 1887.)

Three cases of this disease in children have recently been observed by the author, two in his hospital service, and one in that of Professor Grancher. The history of the first case is as follows:

The patient was a girl eight years of age, who was bitten on



the right hand while at play, on February 11, by a dog. Nothing further could be ascertained concerning the dog. The child's wound was slight, and there was little bleeding. The wound was immediately touched with ammonia, and after seven or eight days was entirely healed. Until April 6 nothing abnormal was observed about the child, but upon that day, at noon, she complained of weariness, and lay down. At midnight she complained of a feeling of oppression, and refused to drink. The sense of oppression recurred the following day with greater intensity, and at night there was a feeling of constriction at the throat, with great restlessness, but no photophobia. Rabies was diagnosticated, and the following day she was removed to the hospital, where she was first seen by the author. She was restless and disturbed, and started at the least sound. Very bright objects and draughts of air gave her great uneasiness. There was no apparent trouble of motility, and neither anæsthesia nor hyperæsthesia. There were frequent spasms of the pharynx, which prevented her from eating. Nothing abnormal could be seen in the throat, there were no pulmonary râles nor heart-murmurs, respiration and pulse were normal. The scar upon the hand was seven millimetres in diameter, was not painful, and was near the middle of the second interosseous space. A few hours later she complained of itching in both arms, scratched herself until she drew blood, and for a moment bit her nails. Three hours subsequently her pulse became irregular and her respiration more frequent. She tried to get out of bed, and had almost incessant desire to pass urine, only a few drops of clear urine being voided each time. The urine contained neither albumen nor sugar, and the microscope revealed nothing of importance aside from crystals of urate of soda. The right pupil was slightly more dilated than the left. Two centigrammes of hydrochlorate of pilocarpine were injected subcutaneously, and this was followed by profuse perspiration upon the face, head, and neck. An hour and a half later photophobia became a source of annoyance. Restlessness became more pronounced; there was hyperacusia, also a sense of burning heat, though the skin was cold. Neither food, drink, nor medicine had been taken by the mouth since the disease began. Shortly after ten P.M. there was a painful attack of hiccough, with almost constant and painful spasms of the larynx and pharynx. These were followed by attempts at vomiting, then a period of rest for a few minutes, then hallucinations of hearing and smelling. The saliva began to flow freely at eleven o'clock. Shortly after midnight there were three attacks of spasm, the pulsations of the heart were tumultuous and interrupted and

108 per minute, intense dyspnœa, painful sputation, and frequent desire to urinate. Between one o'clock and 3.30 A.M. there was a period of calm, the intelligence remaining clear. Milk was offered her, but she was unable to drink it. At 4.30 there was a spasm, with violent delirium, and small, dark spots were noticed upon the chest, the eyes were haggard, and there were hallucinations of sight. At five o'clock she bit her coverings and the ends of her fingers, after which there was a stiffening of the entire body and involuntary discharge of urine. At 5.45 there was another violent spasm, lasting ten minutes. At 6.30 she died, suffocated. The autopsy, made twelve hours after death, showed general superficial hypostatic hyperæmia, intense congestion of the cerebral and spinal meninges, sub-meningeal effusion of blood at the level of the fourth ventricle, emphysema of the lungs, with hyperæmia at the bases, and the bronchi containing much mucus, small, dark clots in the auricles and ventricles of the heart, blood black and diffuent. There was no trace of rabies on the anterior aspect of the tongue, and no other abnormality that could be discovered. Two rabbits were inoculated with matter from this child's medulla, and both were seized with hydrophobia sixteen days subsequently, and died after three days of illness. Other inoculations with matter taken from the nerves of her arms were also followed by the disease.

The noteworthy features in the other two cases resembled those which were narrated in the foregoing; and attention is especially called to the vesical spasms which produced the frequent desire to urinate, the hemorrhage from the stomach, and the spots of ecchymosis upon the skin, and the cutaneous pruritus. It is believed that the vesical spasms were due to irritation of those parts of the cord in which the genital and vesical centres are located. The hemorrhages from the gastric mucous membrane were quite similar to those which occur in hysteria, while the ecchymoses upon the skin resembled those which Van Swieten has reported in connection with attacks of *haut mal*. The itching, which was such an annoying symptom, is very common among rabic dogs. The author believes that the distribution of the virus of rabies includes not only the brain, the medulla, and the cord, but the terminations of the peripheral nerves as well. His conclusions upon this subject are the following:

(1) The frequency (relative) of hydrophobia among children is such that it is indispensable that severe prophylactic measures be taken.

(2) Some of these measures appertain to the prevention of the disease in general.

(3) Others have particular reference to the disease among children, and consist—

(a) In instructions given at the schools forbidding children, under suitable penalty, from teasing or playing with dogs in the street.

(b) In instructions to public officers to see that such regulations are carried out.

(4) Hand-bills should be posted in public places notifying the people that such regulations are to be enforced, and briefly indicating the necessity for such procedures. A. F. C.

Simon: Diabetes Mellitus in Children. (*Rev. Mens. des Mal. de l'Enf.*, October, 1887.)

This grave disease is of rare occurrence in childhood. The theses of Redon in 1877, and Leroux in 1880, furnished the most complete accounts of it that had appeared, and since then it has been well described by Picot and D'Espine and Descroizilles. Hest, Vogel, Niedergesass, and Külz (in "Gerhardt's Handbuch") have also written concerning the disease in connection with accounts of cases. The author published an account of four cases in 1885, and now adds two more to that list. In the first of the latter there was no history of hereditary tendency or other predisposition to the disease. In the second the sister of the patient's mother had diabetes at the age of ten years, and died after an illness of a few months. The patient had also had measles and scarlet fever, and two months before the diabetes began had fallen, receiving a severe blow upon the occiput. In the first of the series of four cases published by the author, the parents were of a nervous diathesis, and the child was profoundly anæmic, and the subject of purpura, which developed spontaneously six months before the diabetes was manifest. The purpura was considered symptomatic of the disease, and was also present in the second of the four cases alluded to. The parents of this child were also neuropathic, and the child had suffered with diphtheria, tracheotomy being required. The purpura existed four months before diabetes was diagnosticated, and was associated with attacks of epistaxis. In the third case the child's father had been diabetic for seven years, passing fourteen to twenty grammes of sugar per litre of urine during that time, and then committing suicide. The child was a seven-months' child, had been poorly nourished, and had suffered from an attack of coxalgia at the age of two and a half years, from which he had recovered. The fourth case was that of an infant fourteen months old, with young and healthy parents, who had developed glycosuria in the course of an attack of diarrhœa. With the dis-



appearance of the latter the former disappeared also. The small number of cases which the author has seen indicates, to him, the infrequency of the disease. Of the six cases two were fatal, two were cured, and in two the disease still exists. The symptoms were about the same as appear in adults, the disease beginning abruptly and developing rapidly. In the fatal cases death was due in one case to pulmonary congestion, in the other to nervous exhaustion. The treatment which was adopted is not regarded as successful, and had little influence in diminishing the daily excretion of sugar. A. F. C.

**Filaton: Scarlatinal Diphtheritis.** (*Arch. f. Kinderh.*, Bd. ix. H. 1.)

Scarlatina has three principal symptoms,—fever, cutaneous eruption, and inflammation of the mucous membrane of the throat. The question arises whether this inflammation, which develops under the influence of the contagium of scarlet fever, can attain to the condition of diphtheritic necrosis, or whether such a condition can obtain only when the infection of diphtheria is added to the existing scarlatina. Writers upon this subject hold diametrically opposite views, the unicists being represented by Thomas, Ellis, Gassicourt, and Bohn, and the dualists, who regard scarlatinal diphtheria as a distinct disease, by Trousseau, Henoeh, Demme, and Heubner. The settlement of this question is of great practical importance, not only in respect to prognosis and treatment, but also in respect to the isolation of the sick. The term diphtheria has a pathologico-anatomical and a clinical significance. To the pathological anatomist it does not mean a particular disease, but a picture, or a condition of inflammation which may occur in different diseases. It means also the existence of an exudate which is either poured out upon the surface of a mucous membrane, and thus forms a pseudo-membrane, or else infiltrates the tissue itself of the mucous membrane, and causes its necrosis. In order to designate the varying intensity of the process different terms are used.

The terms croup and croupous inflammation apply to that form in which the necrosis is limited to the epithelium, the diphtheritic membrane lying upon the surface of the mucous membrane, and being easily separated from it without bleeding and without loss of substance. The term diphtheria, or diphtheritis, is used if the exudate penetrates the tissue of the mucous membrane, and the false membrane can be removed only at the expense of the tissues with which it is so intimately united. The term pseudo-diphtheritis is used to signify an intermediate condition in which the false membrane is attached



merely to the surface of the mucous membrane, but is nevertheless very firmly attached. The pathologists, therefore, place the disease upon an histological basis, and do not regard the causes which lead up to the inflammatory condition and its phenomena. Inasmuch as the false membrane may occur as the result of chemical and mechanical causes, and in a variety of locations, in fact upon any of the mucous membranes, the conclusion is warrantable that the presence of a diphtheritic exudate upon any of the mucous membranes of the body is not, in itself, evidence of infection with the poison of diphtheria.

To the clinician the term diphtheria, or diphtheritis, means a disease of a particular kind which always arises from one and the same cause,—that is, from infection of the organism by a particular poison, the effect of which is manifested by definite symptoms and a definite course. Among the symptoms a diphtheritic or croupous inflammation of the mucous membrane of the throat plays the most important part, but it is not absolutely essential, for it may be wanting in mild cases, which are, notwithstanding, cases of genuine diphtheria, and are capable of propagating the disease. This is called the catarrhal variety of diphtheria. The question now arises, or, rather, recurs, What is scarlatinal diphtheria? Is it identical with ordinary diphtheria, or entirely independent of it? The investigations of Weigert and Heubner have shown the anatomical identity of scarlatinal and ordinary diphtheria. This identity proves nothing, however, in regard to the definite unity of the two forms of disease, and the question still remains as to how far there is etiological difference, and how far difference in the clinical course of these two varieties of diphtheria of the mucous membrane of the throat. From the etiological stand-point comes the question, Can the contagium of scarlatina produce in a sick person a diphtheritic inflammation of the mucous membrane of the throat? and also, What is produced by the poison of diphtheria? In order to answer this question sporadic cases occurring in places which are free from diphtheria must be studied, also epidemics in families, and, further, reports of individual cases in hospitals. In regard to sporadic cases the author's personal experience extended to cases of scarlatinal diphtheria at periods of time when there were no traces of ordinary diphtheria in the neighborhood. The study of scarlet-fever epidemics in families showed the intensity of the disease varied greatly, some children suffering with catarrhal angina as a complication, others with follicular angina, while others developed diphtheria. It also showed that scarlatina, even if complicated by

scarlatinal diphtheria, did not protect the patient from a subsequent attack of true diphtheria, and that diphtheria offered no protection against scarlatina. In view of the facts, therefore, that scarlatina is very often accompanied by true diphtheritic inflammation of the mucous membrane of the throat, and in localities, too, where there are no cases of uncomplicated diphtheria, and that scarlatinal diphtheria does not attack children who have passed through scarlatina, but those who have just become infected with scarlatina and those who have recovered from diphtheria, it must be admitted as proven that such anginal affections can be caused by the contagium of scarlatina, even without the influence of the diphtheritic poison at the same time. The foregoing facts are not accepted by all physicians, and many of them teach the public that scarlatinal diphtheria is entirely identical with true diphtheria, and arises from complication of scarlatina with diphtheria. The difficulty of recognizing the independence of scarlatinal diphtheritis from diphtheria is somewhat analogous to the difficulty which has prevailed in recognizing the independence of varicella from variola. Those who are satisfied upon this point do not hesitate to allow their patients with varicella to mingle freely with their brothers and sisters. In like manner the question has been practically decided that scarlatina does not show any particular tendency to be complicated with diphtheria, and the simple fact that the pharynx of one scarlatinal patient was more inflamed than that of another is not deemed sufficient cause for isolating the child in order to prevent the contraction of diphtheria by others. The study of clinical data in general proves that the dualistic theory is correct, and that scarlatinal diphtheria is entirely different from true diphtheria. It is not denied, however, that true diphtheria and scarlatina may exist at nearly the same time. It may be considered that there is such a relation when the evidences of diphtheria appear some days before the outbreak of the scarlatinal eruption, or eight to ten days after it has appeared. If diphtheritis has not made its appearance by the fifth day of the existence of scarlatina, it may be considered pretty certain that scarlatinal diphtheritis will not appear at all. The next question is, By what kind of anatomical change is the complication of scarlatina by diphtheria effected? Where does the action of the scarlatinal poison end and that of the other begin? The unicists cannot answer the question by saying that there is a gradual change of mild into severe forms of angina, as observed at the bedside, but from the dualistic stand-point such an explanation is quite admissible, because a varying intensity in the effect of poisons is ob-

served in all infectious diseases, and it would be strange if scarlatinal angina were an exception to the general rule. In regard to the course of scarlatinal diphtheria, in mild cases the exudate is limited to the tonsils. In the majority of cases, however, it extends to the neighboring parts, though not to the larynx. In its tendency to ascend, rather than to descend, scarlatinal diphtheritis differs from true diphtheria. The cervical lymphatics and the cellular tissue of the neck are inflamed in scarlatinal diphtheria, as well as in the true form, but not usually with the same intensity. In connection with true diphtheria paralyzes are also apt to occur, but this never occurs after scarlatinal diphtheria, however extensive the exudate may have been. During convalescence from scarlatina there is also no danger of sudden death from heart-paralysis. The effect of therapeutic agents, especially turpentine, varies in the two forms of disease, Satlow showing that while it may have very useful effect in some cases of diphtheria, in scarlatinal diphtheria it is of no avail. This entire question cannot be absolutely decided until further bacterial investigations have been made, and they will probably lead to a change in the nomenclature of the scarlatinal forms of diphtheria.

A. F. C.

Atkinson: A Clinical Study of Erysipelas in Infants. (*Med. Rec.*, November 12, 1887.)

From a review of the literature of the subject of infantile erysipelas and personal observations of cases, the author arrives at the following conclusions:

While he cannot assent to the assertion of even such distinguished authority as Jonathan Hutchinson, that erysipelas is a non-specific disease and of spontaneous origin, he is by no means of the opinion that it is specific in the sense that it is due to a single specific organism, as are smallpox, scarlatina, etc. He agrees with a number of writers who think that it may be an expression of one or more of a number of specific causes; that it should be regarded as a symptomatic inflammation, in which its exciting micro-organisms, themselves differing in nature, react upon the economy in a more or less similar manner, and of the activity of which it may be only one of several phenomena; that while experimental observation may establish the identity of the streptococcus erysipelatis of Fehleisen, as a micro-organism capable of exciting erysipelas in man and other mammals, by inoculation, neither experimental research nor clinical observation will establish it as the sole cause of even the restricted form of erysipelalous inflammation to which its discoverer would apply the term erysipelas. Finally, it may



be said that no conditions are more favorable to the establishment of these opinions than the observation of erysipelas of new-born and nursing infants, which, in other respects, differs from that of older persons in its greater tendency to migration, to a protracted course and to a fatal termination, and, last of all, to the occasional development of an oedematous induration of the affected connective tissue, to some extent resembling scleroma neonatorum.

Love: Infantile Marasmus. (*Weekly Med. Review*, October 29, 1887.)

The term marasmus, like malaria, is a misnomer, and expresses but little as regards the pathology of the disease; it declares simply that our patient is wasting away. The condition of "marasmus" occurs in all forms of exhausting disease, but the name is only applied in cases of wasting unaccompanied with fever or symptoms pointing to any well-defined disease. Among infants we meet with cases that can clearly be referred to congenital syphilis, tuberculosis, etc. Infantile marasmus so called is dependent primarily upon torpidity and inactivity of the glandular system, and aggravated by unsuitable, overabundant, or insufficient food, and unsanitary surroundings. That which is of first importance in the treatment is the arousal of secretion and excretion, and the most valuable remedy we have for this purpose is minute doses of calomel, given in conjunction with as much water as can conveniently be administered, the two agents—calomel and water—being both accelerators of glandular action. In the matter of diet, mother's milk is best. All artificial foods should be predigested. In all cases gentle massage and frequent bathing (sometimes adding diffusible stimulants to the water) are of great service, much of the water being directly absorbed by the thirsty tissues.

Taylor: A Case of Scarlatina with Complications. (*Med. Rec.*, November 12, 1887.)

Child about five years of age had a mild attack of scarlatina, for which he had little or no treatment. During the second week, while convalescent, dark spots appeared upon the arms, extending within twenty-four hours to the trunk and legs. When child was seen, forty-eight hours after appearance of purpura, the trunk and extremities were covered with irregularly-shaped spots, looking like bruises. The oldest and most superficial were turning yellow; the deeper and later were still purple, some almost black. The great toe of right foot was gangrenous, as was the left foot and leg half-way to the knee,

the skin being black, with vesicles filled with bloody serum scattered over it. Left tonsil suppurated, and was incised. Convulsions with left hemiplegia appeared, followed by suppurative otitis of left ear. Two weeks later boy began to improve. A line of demarcation formed about six inches below the knee, the right toe sloughed off, and in a few days leg was amputated. The boy made a good recovery. The paralysis disappeared within a year. Some deafness remains.

**MacDonnell:** On the Early Loss of Knee-Jerk in Diphtheria. (*Med. News*, October 15, 1887.)

The author's observations tend to support Bernhart's views in regard to the loss of knee-jerk in diphtheria. His conclusions are:

1. In a considerable number of cases knee-jerk is lost from the first beginning of the disease, and thus affords a valuable means of diagnosis of the nature of the throat-affection.
2. That loss of knee-jerk is the first evidence of the disease having attacked the nervous system.
3. Absent knee-jerk has no influence on the prognosis.

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### III.—SURGERY.

**Recklinghausen:** Investigations concerning Spina Bifida. (*Arch. f. Kinderh.*, Bd. viii., H. 6.)

An occurrence of a case of spina bifida occulta, with sacro-lumbar hypertrichosis, club-foot, and myo-fibro-lipoma, in a man twenty-five years of age, suggested to the author the investigation of several questions which arise in reference to divisions or fissures of the spinal cord. Thirty-one cases of congenital deformity were studied, including those in which no tumor, either solid or cystic, projected from the edge of the divided vertebræ; those in which there were clefts in the vertebræ, with hernia-like tumors, whether myelo-meningoceles, myelo-cystoceles, or myelo-cysto-meningoceles; those in which there was bifid division of the cord, and also cases of umbilical hernia, with abdominal fissure, and cases of vesical hernia with abdominal fissure. These studies did not confirm the old theory, that in cases in which there was partial division of the vertebral column the medullary canal was primarily closed and subsequently opened by the process called hydro-myelia. They did confirm the Dareste-Koch theory, that the cord in such cases remained in the stage of the medullary plate. It was found that the exterior of the cyst-wall in myelo-meningocele was not constituted by dura mater, but by pia mater, and

that this was also turned inside out, the dura mater being absent entirely. As an instance of the intimate relationship between fissure of the spinal column and myelo-meningocele, it is stated that the remnant of the cord, including nerve-roots, ligamenta denticulata, and spinal membranes, show at one place how it corresponds with the persistency of the medullary groove in the region of the cleft spinal column, except that in fissure of the spinal column the nerve-roots and ligamenta denticulata are arranged in parallel planes, while in myelo-meningocele they form arches and irregular surfaces, because the pia mater is here raised with the rest of the cord through or into the fluid which is in the arachnoidal sac and forms a ball-like tumor. The tumor in this variety of spina bifida, therefore, has its cavity within the arachnoid, and constitutes an external hydrorrhachis. Double divisions of the cord occur not infrequently, and they are most common in cases in which there is complete spina bifida. In the partially-fissured spinal columns the separated halves will be found more fully developed, however. At the beginning or the ending of the divided vertebræ, midway between the two halves of the cord may be found lines of demarcation which have developed from the fibrous and bony coverings of the cord. In the tumors which are associated with spinæ bifidæ and myelo-meningoceles can be found indications of bisection in the columns of the cord where they merge into their walls, and in myelo-cystoceles a partial division of the sac can be made out as the last trace of a beginning process of bisection. The fundamental conditions which control fissures of the spinal cord and of the vertebræ were also studied, and it was found that in all the varieties which have been mentioned the cause was pressure. The fact that the soft spinal membranes did not become very thin as the tumors developed was found to be attributable to inflammatory irritation. This accounted also for the accumulation of fluid and the increase of pressure in the sac. The slight resistance of the membranes to the increasing pressure and the consequent rapid growth of the tumor could be accounted for by the fact that it was pia mater and not dura mater which formed the sac-wall. Of course the secreting organ in meningocele and myelo-meningocele is the arachnoid, and in myelo-cystocele is the pia mater. No warrant was found for the old belief that the primary cause of these deformities was to be found in an embryonal hydromyelos. The simultaneous occurrence of dropsy of the spinal canal with spina bifida and fissure of the cord neither proves that the latter are caused by the former, nor that the latter are due to a fault in early embryonal life.



The author looked upon them as mere coincidences, and considered that the primary disturbance lay in the embryonal germ of the bony and membranous coverings of the cord,—that is, in a local aplasia of the mesoblast. He believed that the fault thus beginning with the blastoderm, either the symmetrical halves do not form attachments to each other, or they contain defective elements which interfere with the energy of their growth, and lead to secondary arrests of development and fissures in the embryonal germ. The two principal varieties of spina bifida will be distinguished according to the direction in which the aplasia of the vertebræ is exerted. If there is no median junction of the bilateral germ of the vertebræ, fissure of the spinal column and myelo-meningocele will result. If the development of the vertebræ is defective in a longitudinal direction, while the lengthening of the cord proceeds normally, its canal being closed, the result will be myelo-cystocele and myelo-cysto-meningocele, the steps in the process being too great a length of the canal, bending of the same, bulging, arrested development, congestion, and transudation. The differences between spina bifida, myelocele, and meningocele are also dependent upon later and secondary processes, upon the presence or absence of external hydrorrhachis, therefore upon secondary congestion and irritation of the arachnoid; also upon the pressure influence of the amniotic fluid, which may have led to atrophy in the nerve-elements and other secondary changes. It is a matter of importance with reference to the formation of an epithelial covering to the tumor whether the remnant of medullo-vascular tissue is large or small. The existence and recognition of this area medullo-vasculosa on the external free surface of myelo-meningoceles is of great significance with reference to diagnosis and treatment. It enables one to decide whether nerve-fibres are in the sac and where the nerve-roots and columns of the cord are located.

A. F. C.

**Symington Johnson: Topographical Anatomy of the Child.** (*Centr. f. Kinderh.* [abstracted], September 3, 1887.)

The future of pediatrics lies in the working out of theoretical foundations. It is only as new investigations show the peculiarities of human beings during the period of growth that it can be generally recognized as a collateral science. Such investigations must not be given over entirely to the theorist. To the physiology of childhood excellent contributions have been made by specialists in pediatrics, but to its anatomy very few. Henke's contributions to the latter subject in the second edition of "*Gerhardt's Handbuch*" are praise-

worthy but incomplete. Dwight published in New York (1881) "Frozen Sections of a Child," showing fifteen consecutive horizontal sections through a three-year-old girl, which were very instructive. Johnson's work furnishes an interesting and valuable addition to that of his colleagues herein mentioned. He has already published, previous to his present work, "The External Auditory Meatus in the Child," *Jour. of Anat. and Phys.*, 1885; "Position of the Empty and Distended Bladder in the Male Child," *ibidem*, 1885; "On the Relations of the Larynx and Trachea to the Vertebral Column in the Fœtus and Child," *ibidem*, vol. ix. In the present work, which is of great value, he publishes the results of his own and also others' investigations in this field. The first part of the book contains, in large colored plates, a sagittal section through a girl thirteen years of age, the same through a boy six years of age, three frontal sections through the head of a five-year-old boy, a horizontal section through the head of a boy four and one-half years old, thirteen horizontal sections through the trunk of a five-year-old girl, a sagittal section through the abdomen of the same child, two schematic pictures showing the position of the thoracic and abdominal viscera in a six-year-old girl and a five-year-old boy, two frontal sections through a four-and-one-half-year-old boy. Peculiarities are explained by special wood-cuts. Every plate is accompanied by a text which explains the difference between it and the corresponding adult anatomy. The second part gives the existing literature of this subject, and then describes systematically the anatomy in children of the brain, ear, frontal sinuses, jaws and teeth, vertebræ, neck, thorax, abdomen, and male and female pelvic organs. Schematic drawings assist in the understanding of the text. Reference is also made to practical questions, such as tracheotomy and lithotomy. There is a want of attention, however, to the important anatomy of the first year of life.

A. F. C.

Lediard: Peritoneal Abscess discharging through the Umbilicus. (*Lancet*, August 6, 1887.)

A boy of ten years was brought to the hospital with marked symptoms of exhaustion, hectic, etc., and an enlarged abdomen, which was said to have lasted six weeks. The umbilicus was converted into a red protuberance the size of a walnut, which burst a week later, giving vent to clear pus. This continuing for some time an incision was made, enlarging the opening, and a drainage-tube was inserted. Inasmuch as a probe always passed towards the right iliac fossa, the origin of the abscess was thought to be a perforation from typhoid fever. No dis-

tinct abdominal tumor was present at any time. After prolonged discharge and hectic symptoms of a severe type, the sinus closed, and the child was discharged well six months after symptoms were first seen.

**Richards : Retro-Œsophageal Abscess.** (*Lancet*, October 1, 1887.)

The patient, three years old, had shown symptoms of Pott's disease for three months ; for a number of weeks before admission stridulous respiration and cough were noticed. The dyspnoea varied much, sometimes being more marked on inspiration and sometimes more on expiration. There was no cyanosis. The signs of pneumonia developed, and death took place six days after admission. The autopsy showed the sac of an abscess as large as a horse-chestnut in front of the spine and a little below the level of the larynx. The last cervical and two upper dorsal vertebræ were carious.

The singular feature of the case was that, notwithstanding the pressure on the œsophagus, dysphagia had been entirely absent during life.

**Renton : Abscess between the Trachea and Œsophagus simulating Croup. Tracheotomy ; Death from Rupture.** (*Lancet*, November 12, 1887.)

A child seventeen months old had been ill for six days with fever and croupy symptoms. The dyspnoea was paroxysmal, and at times so severe as to threaten asphyxia. Tracheotomy was finally done, and the breathing was easy until the inner tube was inserted. It had to be left out. On the third day afterwards an abscess ruptured into the trachea, causing death. This was found to have formed between the trachea and œsophagus, and in the sac was a pin two inches long, which had evidently been swallowed. The larynx and trachea were healthy.

**Bland Sutton : Spina Bifida Occulta.** (*Lancet*, November 5, 1887.)

The fœtus from which the specimen shown was taken presented a number of abnormalities ; lateral curvature of the spine, talipes equinus of the left foot, atresia ani, imperforate pharynx, the œsophagus communicating with the trachea, and single kidney.

The arches of the lumbo-sacral spine were defective, and the central canal of the cord was dilated at this point. The cord extended to the tip of the coccyx, and terminated in a fatty tumor. A supernumerary half vertebra was found between the eleventh and twelfth dorsal, and one between the last dorsal and first lumbar, explaining the tilting of the spine.



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LEHRBUCH DER KINDERKRANKHEITEN FÜR AERZTE UND STUDIRENDE. By A. BAGINSKY, Privatdozent a. d. Universität Berlin. 2 verm. und verb. Aufl. Braunschweig: F. Wreden, 1887.

This excellent text-book on the diseases of children has lately appeared in this second enlarged edition, and will be welcomed, not only by specialists, but particularly by physicians in general practice who have been fortunate enough to master the difficulties of the language of the "Vaterland."

The author's name is well known as an indefatigable and thorough-going original investigator of the various pathological conditions obtaining in childhood. Not only in his clinic and his large private practice, but also in his laboratory, he has worked hard and conscientiously to consummate the results which form the basis of his teachings, as they are contained in the nine hundred pages of this volume. This originality is a prominent feature of the book, which only a few others treating of the same subject can be said to share.

The general arrangement as to the division of subjects is the usual one, and includes chapters on diseases of the skin, of the organs of the special senses, and one on diseases of the vertebral column. In all of the latter only the several diseases particularly to be met with in childhood, or as complications of certain infantile affections, are described and treated. Short, practical, and circumspective in his descriptions of the pathology and symptomatology, Baginsky is equally lucid and reliable in his therapeutics. In the treatment of a great number of children's diseases he has devised, tested, and carried out new measures, and very frequently a certain line of treatment devised and tried by others has been firmly established in children's practice only by his untiring efforts. One of the former is the frequent and copious irrigation of the intestines with a lukewarm solution of sodic chloride in cholera infantum and other affections of the intestinal tract.

The volume contains two appendices,—one giving a list of the doses of various drugs for children, and the other a valuable collection of prescriptions which Baginsky uses in his dispensary and private practice.

G. W. R.

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THERAPEUTICS OF INFANCY AND CHILD-  
HOOD.

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eases of Children in the College of Physicians and Surgeons, New York, etc.

(Continued from February Number.)

II.—TREATMENT OF THE NEWLY-BORN.

1. *Asphyxia.*

THE prognosis of asphyxia and of its treatment is a very doubtful one in many cases. It does not only depend on the knowledge and skill of the physician, but on the causes of the abnormal condition. A moderate or serious compression of the head, compression or prolapsus of the cord, intra-uterine respiration and aspiration of foreign bodies, apoplexy, anæmia of the fœtus, accumulation of carbonic acid in the blood, poisoning by the morphia, chloral, or excessive temperature of the mother, congenital diseases, and malformations, each of them or several combined, influence both the prognosis of the individual case and the result of therapeutical procedures.

When the long duration of labor, the prolapsus of the cord, the protracted compression of the head, the early loss of amniotic liquor, or a high temperature of the mother endangers the life of the fœtus, the best *preventive* of asphyxia is the artificial termination of parturition. The respiratory organs of

the foetus passing out of the vagina must be protected from contact with copious discharges of liquor amnii and other foreign material accumulated in the bed, the face being raised so that aspiration, mostly through the nose, cannot take place. The mouth of the newly-born, unless it cries lustily, must be cleansed immediately by a moistened piece of cloth wrapped round the finger, the tongue drawn forward, and the baby placed on its side before attention is paid to anything else. Beating the nates, tickling of the fauces by means of a feather, and the momentary inhalation of ammonia can be resorted to before the baby is separated from the placenta. Most practitioners, indeed, will prefer to prolong the connection with the maternal organ until the pulsation of the cord begins to flag, under the usual circumstances. The separation of the baby must take place immediately when there is no pulsation in the cord, or asphyxia is well pronounced. When the baby is strong and cyanosis marked, Grenser recommended to allow the cord to bleed before the application of the ligature. When bleeding was but scanty, he invited it by placing the baby in a warm bath. This procedure I have imitated several times with advantage.

When the ligature has been applied and the baby removed, the mouth of the asphyctic infant ought to be cleansed again as above, quickly but gently. For amniotic liquor, meconium, and vaginal secretion, when aspirated, will, though the asphyctic condition may be relieved, give rise to bronchitis and pneumonia after two or four days. Many babies die in this way.

Insufflation into the lungs for the purpose of establishing respiration has been practised by Smellie as early as 1762. It is done from mouth to mouth, from mouth to nose, or by catheterization of the larynx. The first method is not reliable, if but for the tongue closing pharynx and larynx; the second is often successful, but may inflate the stomach as well as the lungs. By inflating the former the chances for a normal action of the lungs become less. After every insufflation which fills the lungs, the chest ought to be compressed by two hands over the lower latero-anterior region of the chest-walls.

The direct insufflation of the lungs may become detrimental



for several reasons. Thus, H. Reich has the case of a consumptive midwife who was reported to have infected twelve infants with acute tuberculosis in thirteen months. In the practice of another midwife, who was healthy, in the same town, no such case occurred. During nine previous years there were but two cases of tubercular meningitis, and but one in the year following the death of the consumptive woman. Moreover, the act of insufflation may prove dangerous by the impossibility of limiting the force of the entering volume of gas. Rupture of pulmonary tissue and emphysema have been observed. The same accident may occur when a catheter is used for the same purpose. It has, however, the advantage of permitting the sucking out of the aspirated material before air is blown into the lungs. Ribemont's and others' metal catheters cannot be carried much below the vocal cords. An elastic catheter, guided by a wire which allows any degree of bending and may be withdrawn when the vocal cords have been passed, is better adapted for both aspiration and inflation.

The asphyctic baby ought to be plunged into a warm bath (100° F.) immediately, and gently rubbed. The other methods may be continued during that time,—beating, tickling, electricity. When it is thin, pale, and collapsed, a hot injection into the bowels (104°–108°) will render good service. The quick and repeated alternation between the warm bath of a minute and a cold one of one or two seconds, or the pouring of cold water on chest, or neck, while the body is in the warm bath, restore many. But great care must be taken lest the bath be too hot. It may produce convulsions, and has been known to give rise to tetanus. Before, and after the bath, indeed at any time, the vigorous swinging of the baby on the arms of the medical man is a good adjuvant.

Among all the mechanical methods of artificial respiration (Marshall Hall, Silvester, Howard, B. Schultze, Pacini, Woehler, Bani, Schüller) those of Silvester and Schultze render the best services in the asphyxia of the newly-born. Both are very simple, and either of them is effective.

Silvester places the patient on his back, a small pillow (piece of clothing, towel, sheet) between the shoulders, the tongue drawn forward. The two arms are caught above the elbow

and slowly carried upwards. Thus the chest is expanded. Then they are carried downwards and pressed against the sides of the chest, a little anterior to the axillary line. Thus the lungs are compressed. This combined action may be repeated fifteen or twenty times in a minute.

B. Schultze places his index fingers into the axillæ, the three other fingers gently against the sides of the chest, the thumbs covering the shoulder from behind. The infant is then swung forward. The lower extremities bend on the abdomen, the abdomen presses against the diaphragm, and the lungs are compressed,—expiration. The parts then return slowly downwards and swing back, thus expanding the chest,—inspiration. This action may also be repeated fifteen or twenty times in a minute. There is but one (occasional) contraindication to the employment of this method,—viz., the insufficient development of the fœtal bones. When the newly-born is too premature, and the ribs too soft and flexible, it is useless.

During all this time, whenever feasible, the surface of the infant must be kept warm artificially by hot blankets, stones, bottles, and a few drops of brandy, whiskey, camphor-water, or tincture of musk may be given in some hot water if deglutition is possible, or injected into the rectum. When the main difficulty appears to be, after a while, in the excessive debility of the heart, it is possible that a five-hundredth part of a grain of nitroglycerin, repeated after fifteen and thirty minutes, will do good and speedy service through its ready absorbability on every mucous membrane. I have no experience with it in the asphyxia of the newly-born, but its rapid action in failing heart and collapse and shock from other causes encourages me to recommend it for a fair trial of its powers.

Electricity was recommended in cases of asphyxia as early as 1793 by Hufeland. But the first case, in which the rhythmic faradization of the phrenic nerve and its associates was resorted to (Ziemssen) for the purpose of producing artificial respiration, was that of an asphyctic girl poisoned by carbon oxydul. The phrenic nerve acts on the diaphragm. Its aids are the cervical plexus, which controls the trapezius, levator

scapulæ, and middle scalenus muscles, and the brachial plexus. The ramifications of the latter are the anterior thoracic nerve for the pectoralis major and minor; the posterior thoracic for the middle scalenus, posterior superior serratus, and the rhomboid muscles; and the lateral thoracic for the serratus anticus major.

In many cases since, such as poisoning by chloroform, coal gas, opium, diphtheria, sulphide of hydrogen, and pernicious intermittent fever, also in those of apoplexy, drowning, and hanging, electricity has been employed to advantage. Its effect is often rapid and powerful.

In asphyxia of the newly-born, the systematic faradization of the phrenic nerve has been first employed by Lauth and Pernice.

The point of application selected by most authors is near the sterno-cleido-mastoid muscle, over the phrenic nerve. The other pole is applied either to the neck or to the diaphragmatic region or any other part of the surface. The localization of the effect to the phrenic nerve alone, which was insisted upon by many, is certainly an illusion. The current will surely strike the pneumogastric, phrenic, sympathetic, and many sensitive and motory nerves at the same time. As this cannot be avoided, as indeed it is better that it should be exactly so, it is best to use large sponge electrodes and moisten them thoroughly with salt water. The head, arms, and shoulders should be slightly raised, and a small pillow placed between the shoulders for the asphyctic baby to rest on. One of the electrodes must be kept stationary; the other brought into contact with the surface but a single moment. A deep inspiration will then take place, the lungs will expand, and lateral pressure on the lower part of the chest must be resorted to for the purpose of emptying the lungs afterwards. Another application is then made with the same result, and must be followed with the same manipulation. This has to be continued for some time until the baby cries, and it appears safe to discontinue the application. Whenever a cough or a coughing movement is noticed, it must be omitted temporarily. The favorable result, however, is not always permanent. The causes of the asphyctic conditions are still active, and the infant



will require resuscitation again, and perhaps many times. Thus close attention must be paid, sometimes for many hours.

Great care must be taken in regard to the duration of the application. Continued or too frequent irritation by the current causes over-irritation and paralysis. Not infrequently is the immediate effect a favorable one, inspiration becoming deep and the heart active, but after but a short time the former grows more superficial, the pulse feeble, and the cyanotic hue returns to the lips and finger-nails. Then it is time to stop for a while, and resort temporarily to other means of resuscitation. Thus the practice of Lauth's, who applied the current for from two to three minutes, is decidedly improper and dangerous.

In some cases, where the interrupted current is inefficient, the galvanic (continuous) current, with occasional interruptions, has been known to yield better results. In my own cases I have never had an opportunity or been under the necessity of employing it.

The application of large sponge electrodes may not always be convenient. In those cases no harm is done by using the metal poles instead. Though the irritability of the brain (and nerves) is but low in the newly-born, the pain produced by the interrupted current thus applied is very intense, and the effect on the contraction of the diaphragm quite marked. Thus it is not necessary to lose time for preparing, if not handy, the more complicated apparatus. Still, exhaustion is more readily obtained through resuscitating by pain and muscular action combined than by muscular contraction alone. In most cases, however, I was satisfied with not losing even a fraction of a minute, particularly in those early times, where the most convenient apparatus was the old-fashioned rotating machine.

How long is the asphyctic baby to be watched and the attempts at resuscitation to be renewed? At all events they must not be given up as long as the heart-beats are audible, though ever so feebly. Nor is the crying sufficient to permit watchfulness to be relaxed. The deep recession, during inspiration, of the diaphragmatic region (the "peripulmonary groove" of Trousseau) must have ceased, the cry be vigorous, the eyes wide awake; and the extremities in lively motion. Before this end is attained there is danger of a relapse, partly

from impaired innervation and the continuation of some of the causes of the asphyxia, and partly from obstruction through mucus, which may be coming up constantly and gathering in the pharynx and posterior nares.

## 2. *Post-Natal Asphyxia and Atelectasis.*

Atelectasis may be congenital or acquired. The lungs may never have expanded to their normal degree, or after expansion had taken place, they may have collapsed, or contracted again. The causes of this condition may also be either congenital or acquired. There may be malformations and intra-uterine diseases of the organs of respiration or circulation, such as defective development of the lungs, hernia of the diaphragm, hypertrophy of the thyroid gland, pleural effusions, syphiloma of the lungs, acquired bronchial catarrh, bronchitis, and pneumonia. Or anomalies of the nervous system may exist, such as hemorrhage or some other injury of the respiratory centre, and cerebral pressure from effusion, beside intra-uterine malformations. Or, finally, the baby may be premature, with feeble muscles and soft bones.

The treatment resembles much, or is identical with, that of genuine asphyxia. Respiration must be insisted upon. Warm and cold baths, cold affusions in the warm bath, swinging, beating, and electricity come each in for their share in the treatment. The baby must be made to cry, or it will perish. This indication is particularly urgent in the acquired cases of atelectasis which result from bronchitis. There the small bronchial tubes are filled with a viscid sticky mucus, which must be removed. This is a condition not peculiar to the quite young, it is as well met with in older babies suffering from bronchitis, particularly when in a condition of ill-nutrition and general debility. In them, the closing of the nose and mouth for from four to eight seconds will so saturate the respiratory centre with carbonic acid as to elicit deep and forcible inspiration immediately. It is an effective method, and not cruel because it is successful.

The babies must be fed conscientiously. As many are suffering from inanition, this must not be neglected. They must have plenty of water, warm or hot, with from one to four

drachms of brandy through the twenty-four hours, aq. camphoræ, a few drachms; perhaps, as suggested above, nitroglycerin. Hot injections into the rectum will stimulate the nerves and fill the blood-vessels. The infant must be carried about, its position in bed changed from time to time, and its skin be kept warm according to the methods detailed before.\* Even the most desperate-looking cases, with shallow respiration, and cyanosis of the skin and mucous membranes, may recover when the attendants are as persistent as the morbid condition dangerous.

D'Outrepoint saved a newly-born of thirteen inches in length and one and a half pounds in weight, Kopp one of eleven inches and two pounds, Redman one of thirteen inches and a pound and three and a half ounces, Ahlfeld one that was born in the twenty-ninth week of utero-gestation, measured fifteen inches (thirty-nine and a half centimetres), and learned how to suck after a few weeks; and another one that had the same size of fifteen inches and a weight of forty-eight ounces (fourteen hundred and fifty grammes) when five weeks old. It also took the breast afterwards. Several infants of less than three pounds at birth I have saved myself, nor are similar cases quite rare in the literature of the subject.

J. H. Moore published in the *Philadelphia Reporter* of April 17, 1880, the case of a fœtus born before the end of the sixth month of utero-gestation; length nine inches, weight one and a half pounds, that cried after thirty minutes, but did not move. Fifteen months afterwards the same fœtus is said to have commenced to walk, and weighed nineteen pounds.

### 3. *Kephalhæmatoma.*

The hemorrhage between (mostly) the parietal bone and its pericranium is usually the result of pressure by the lower

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\* It is this condition, in which Credé's and Tarnier's apparatuses (*couveruse*) have triumphed over great difficulties, and mainly in premature babies. Still, any box or bed, with hot bottles and stones, or a box with double walls filled in with hot sand, or a bed with hot flannel, or cotton, or the hot register, or anything the good will and ingenuity of the practitioner will supply, will answer the purpose. At the same time the air admitted to the lungs must be cool and pure.



segment of the uterus. Occasionally, however, kephalhæmatoma is observed after breech presentation also. It is caused by the deficient development of the external layer of the cranial bones and the shallowness of the indentations in which the blood-vessels are running, the thinness of the vessels, and the mobility of the integument. It is circumscribed, does not spread beyond a suture, fluctuates, and begins to be surrounded, after a few days, by an osseous ring, the result of the formation of new bone from the raised periosteum. It grows in size for some days, then remains stationary, and is gradually absorbed within from six to twenty weeks. After this time the bone is thickened, but absorption of the newly-formed bones will also take place in most cases. But rarely a permanent thickening will be noticed in later life.

In some cases there is an internal kephalhæmatoma as well. It consists in a hemorrhage between dura mater and cranium, and may lead to all the consequences of intra-cranial hemorrhage (apoplexy of the new-born),—viz., convulsions, paralysis, death, or meningitis, cystic degeneration, etc. There may be no contiguity between the external and the internal hæmatoma. Still, many cases of the external form will extend directly into the cranial cavity through a congenital fissure in the bone.

The treatment is forestalled by what has been said of the spontaneous absorption of the extravasation. No treatment is required. The swelling must be left alone. The bony thickening will also get well in the course of time. It is important to insist upon this expectative treatment, because the attendants will often not appreciate the absolutely benign nature of the large tumor.

Meddlesome practitioners have tried compression. If there be any communication with the cranial cavity, this procedure may become dangerous by blood being pressed into the interior. Ointments have been recommended "to make believe," for the purpose of quieting the anxiety of the family. Puncture has been resorted to. If made at an early period, it will facilitate new bleeding; in many a case it has been known to produce suppuration, though the operation was believed to have been made antiseptically. Incision is still more reprehensible. It is not permissible except in those cases which have terminated

in suppuration through previous maltreatment. Then a large incision and thorough disinfection are indicated, and will be followed by a relief to pain, redness, and fever. Puncture, aspiration, or incision may perhaps be necessary, even without suppuration, in one of two conditions: firstly, the tumor may be so large as not to undergo absorption for many weeks, and to endanger the bone, which may become necrotic; still, I have not seen such a case these twenty years; secondly, in a case of complication with apoplexy, aspiration may be capable of allowing some of the internal extravasation to escape.

Other indications for the treatment of this internal cephal-hæmatoma are yielded by the asphyxia depending upon the disturbed innervation. The antiphlogistic treatment will be confined to cold or cool applications only. The consecutive paralysis demands an appropriate treatment, the results of which will be mostly questionable, and depend upon the amount of extravasated blood, of tissue destroyed or compressed, and consecutive changes in the nerve-centre.

#### 4. *Hæmatoma of the Sterno-Cleido-Mastoid Muscle.*

The fragility of the foetal blood-vessels, and some injury experienced by the muscle during parturition gives rise to a hæmorrhage about or above the middle of the long muscle. When observed the tumor has the size of a hazel-nut or more; it is spherical, circumscribed, and rather hard. The latter condition is due to the secondary inflammation of the torn muscular fibres. This occurrence is not at all very uncommon. Even in older children, mainly in kite-flying boys, who extend either of their sterno-cleido-mastoid muscles incautiously, the same hæmatoma and myositis are observed.

When observed at an early period the local application of ice may reduce the bleeding. For a week, after ceasing the employment of ice, small pieces of cloth moistened with cold water will check the secondary inflammation to a certain extent. During all this time the head must be kept quiet,—best perhaps by carrying the baby on a hair pillow large enough to support the whole body, head included. When the tumor has time to become hard, it may last for years; when it is large, it may give rise to a slight torticollis. Then gentle stretching

and massage, the application of a mild galvanic current, and the inunction of an absorbable ointment of iodide of potassium may be tried to advantage (iodid. potass., aq., ãã 1; adip. suill., 2; lanolin, 6-8).

### 5. *Sclerema.*

The induration of the connective tissue of the newly-born known by that name, consists of a serous infiltration (of and) under the skin, begins generally in the lower extremities, and spreads over the whole body with the exception of the chest. The surface is apt to be slightly hyperæmic in the beginning, and then turns yellowish and quite pale. Respiration is shallow, nursing feeble, secretion of meconium and urine scanty, sensibility diminished, the pulse slow (60-75), accelerated only towards the fatal end, and temperature reduced much below the normal, even to 90° and less. Recovery takes place but very rarely. Even those who suffered from a slight attack only, are liable to perish of pneumonia after two or three weeks. Many of the infants are prematurely born, exhibit defective innervation, possibly from foetal brain-disease, or suffer from some cardiac affection.

The patient must be fed from a spoon or through the "biberon pompe," mentioned in the first essay of this series. Alcoholic stimulants may be given in the shape of brandy or whiskey, four to six drops every half-hour; also a drop of tinct. digitalis every hour or two hours, and aq. camphoræ, ten drops every hour. Massage commencing at the periphery, gentle but persistent with the thoroughly-warmed hand, or through a warmed cloth, will improve the circulation, and probably absorption, to a certain extent. Maybe, also, that extensive (general) galvanization of the surface will serve the same purpose. The infant must be kept warm near a stove or furnace register, provided the head can be kept away from it and the air-supply for the lungs be kept up at a moderate temperature. Otherwise hot stones, hot sand, hot bottles, must be distributed, well covered, through the bed at a safe distance. Frequent bathing in salt water of at least 100°, with constant friction and massage in the bath, will prove as beneficial as the bad or very doubtful prognosis in most cases will permit.



6. *Bathing.*

The first bath of the newly-born, and bathing of infants in general, demands great caution. For the temperature of the young exhibits some peculiarities in regard to both its development and elimination. Immediately after birth it is apt to decrease by a degree (F.) or more, in consequence of defective circulation and respiration and the great difference of the baby's surroundings before and after birth. A feeble new-born requires more time for its temperature to rise again to its norm. That is so particularly in regard to the surface. Thus it is that the thermometric measurements when made in the axilla are as deceptive in the feeble young as they are apt to be in adults, with an immense fat layer underneath or with insufficient superficial circulation.

A certain degree of cooling in the air of the room takes place under all circumstances at birth. When moderate, the sudden change acts favorably by inciting reflex action, but a considerable and continued reduction of temperature must have a dangerous influence at a time when the functions of the body are not yet regulated.

In Lassar's experiments, when an animal after recovering from albuminuria got exposed to a cold temperature, the same condition returned. Rabbits thus exposed, without or after depilation, suffered from interstitial inflammations of liver, lungs, heart, and neuroglia. The blood-vessels of liver and lungs became enormously dilated, the arteries filled with thrombotic masses, and leucocyte emigration was marked round the veins. When the animal was pregnant, even the liver and other organs of the fœtus were found to be inflamed. This is exactly what clinical experience has taught every observer of every generation, in spite of modern contradiction. Thus I have observed a sudden return of the morbid symptoms in three persistent and protracted cases of hæmoglobinuria after every exposure to cold, and particularly cold and moist air.

Therefore the newly-born babe must not remain uncovered for any length of time. The nurses who spend—with more pedantry, emphasis, and self-consciousness than intelligence—much unnecessary time in oiling and soaping and washing and bathing, turning this and that way, drying the surface,

wrapping the navel, applying the bandage, and dressing the newly-born in fineries, in which it finally arrives shivering with a cold nose and blue feet, are not infrequently the causes of ill health or death. In a case recently seen, the pneumonia of the newly-born was undoubtedly due to the fact that the baby was neglected while both physician and nurse were engaged about the fainting mother. Craig must have seen many such cases, for with him "no baby is ever washed, dressed, fed, tied up, the cord is not wrapped up, but the infant is anointed with fat and wrapped in flannel the first twenty-four or thirty-six hours."

The bath of the newly-born must not be hot. A single midwife in Elbing lost ninety-nine babies out of three hundred and eighty, of trismus. Through all her life she had estimated the temperature of the bath by trying it with her uncovered arm. She lost her temperature sense after a while, as was found by a judicial investigation, and the babies their lives. Still, the bath ought not to be less than 90° F., nor ought it to be much cooler through a number of months, in spite of a French author's opinion, who says that the epidermis becomes macerated by warm baths; that babies who are getting bathed grow "pale, soft, and flabby and eczematous," and proves the correctness of his position by his zoological discovery that "no other mammalia take a warm bath regularly."\*

The proportion of the surface to the cubic mass of the human body is larger in an infant than in an adult, and with it is the number of peripherious nerve-ends and capillaries relatively greater. Thus there is a greater liability to reflex symptoms depending on exposure in spite of the low degree of nervous irritability in the newly-born. Thus it is

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\* To the general rule implied in the above remarks on the necessity of bathing in warm water only, according to which the body of the newly-born infant is to be kept warm, the head forms an exception. Artificial heat and feather pillows ought to be avoided. A soft hair pillow is preferable, or a quilt lined with a layer of cotton. Whenever it is necessary to employ a soft head-rest, a feather pillow may be covered by a bed-sheet folded up to the size of the pillow and fastened to its corners by safety-pins.

that a protracted cold bath is not well tolerated even by older infants; but, also, that tepid or cold bathing or packing exhibit a very much more rapid effect in the young than in the old. For both the reduction of temperature and the reflex effect do not depend on the weight of the body, but the extent of the conducting and radiating surface.

When the baby is six months old, particularly during the summer months, the warm bath is to be succeeded by washing and friction with tepid and, later on, cold water. When washing is substituted for bathing, water may be selected of a lower temperature, inasmuch as but a part of the surface is exposed to its influence at one time. When the bath is gradually made cooler, in the course of time, friction of the skin during bathing stimulates its action. In pathological conditions, when cool or cold bathing is resorted to for the purpose of reducing an abnormal temperature, this aim is always reached as far as the surface is concerned. But to accomplish the same end for the whole body, it is necessary that the skin should retain its vitality and lively circulation. Unless that be so, the internal temperature may remain unchanged, or even rise while the surface is cool. In such a case, which must be ascertained by taking the rectal temperature, the cold bath ought to be followed immediately by a hot one for the purpose of restoring the surface circulation. In this way the reduction of temperature aimed at by the administration of a cold bath is finally accomplished by the hot in a desperate case. In milder ones the warming of the extremities and the general surface by dry heat may suffice to restore the warmth of the surface. At all events, a cool or cold bath after which the feet do not become warm at once, is dangerous.

#### 7. *Mamma. Mastitis. Perimastitis. Angioma.*

Since the time of Menard, Scanzoni, and Guillot, the secretion of the mammary gland of the newly-born has been the subject of frequent investigations by clinicians, chemists, and physiologists.\* It is mostly found towards the end of the first

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\* Jacobi, in Gerhardt's Handb. d. Kinderkrankh., 1st vol., 2d part, p. 39, of the 2d ed. 1882.



week, and resembles very much the milk of the mature woman, in the mammæ both of the male and female infant. The superficial milk-ducts are obstructed with epithelium; the interior ones are dilated in many places and filled with a cuboid epithelium and a liquid which resembles colostrum. This secretion may be absent, but it is frequently found in premature or still-births, though the mammæ be but rudimentary. The dilatations (ectasiæ) will increase in size for weeks, and begin a retrograde development as late as the middle of the first year of life.

The tendency of epithelial elimination, which is a peculiar feature in the newly-born, and which is so commonly observed in its skin, mucous membranes, sebaceous follicles, and kidneys, appears to be very marked in the mamma of the newly-born. This discovery of Epstein's renders the subject of our discussion very much clearer from an etiological point of view.

The swelling and secretion of the gland may last a week or two when undisturbed. After it has been squeezed out ever so gently, a new secretion will be invited and continue five or six weeks. Thus pressure of any kind must be avoided. It is barely possible that it may not be injurious, and that a gentle inunction of warm oil, which is so commonly used, may do no harm. But as a rule every sort of pressure occasions an attack of inflammation and, maybe, suppuration. Though an abscess be ever so small it is sufficient to destroy all or a part of the mamma forever,—a serious misfortune in a female. A swelled mamma must be left alone. Applications of cool or warm water, the cloth being well pressed out and covered with oil-silk and cotton, or flannel, or of a mild lead wash, will answer well. Also applications of iodide of potassium dissolved in glycerin, one part of the former in two or five of the latter, which are repeated every few hours. Extract of belladonna may be added to advantage. When suppuration could not be avoided, the incision must not be delayed. It ought to be made at the greatest possible distance from the nipple, directed towards the nipple, so as not to cut the main milk-ducts, and treated antiseptically. Indurations remaining behind require frequent and gentle inunctions of an iodoform ointment (iodoform, ℥ii; ol. bergamot, ℥iv; adip. suilli,

3vi-x), or iodoform collodium, to be applied with a brush twice every day (iodof., 1; collod., 10-20) in such a manner that only those scales of the application which are found peeled off from the skin, have to be removed before a new layer is applied over the dried-up previous application. A very mild galvanic current of from two to six elements, conducted through the induration by means of soft sponge electrodes moistened with salt water, has rendered me good services in many cases.

Perimastitis, the inflammation of the surrounding connective tissue, may occur primarily, but is mostly the final result of traumatic mastitis. It grows dangerous, *unless* incisions are made early and treated antiseptically, with great care. I have met with not a few cases in which the suppuration of the connective tissue was very extensive, spread over a large surface, undermined the skin of the chest, axilla, and back, resulted in gangrene, erysipelas, or sepsis, and terminated fatally. The antiseptic solutions (applications, injections, irrigations) must be used frequently, but ought to be mild. Carbolic acid ought to be avoided, for infants are easily poisoned by it.

The mamma ought to be examined for angiomas in every baby, whether there be mastitis or none. Nævi are by no means rare in this neighborhood, and ought to be destroyed at once, either by the application of concentrated nitric acid or by the actual cautery (red-hot iron, galvano-cautery, or thermo-cautery), for they are liable to grow rapidly, and prove dangerous to the female. The former mode of treatment is adapted to superficial nævi only. Deep-seated ones, and real vascular tumors, require the actual cautery.

(To be continued.)

## ON VENEREAL AND GENITO-URINARY DISEASES OF CHILDREN.

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(Continued from February Number.)

## III.—AFFECTIONS OF THE MUCOUS MEMBRANES, VISCERA, AND NERVOUS SYSTEM.

THE mucous membranes of children, the subjects of inherited syphilis, are attacked in a manner similar to the affections of the skin considered in the last paper; the division being made between those affections which occur early in the course of the disease (shortly after birth) and those which occur during the later stage, known as syphilis hereditaria tarda. During the earlier stages, if the child be born with evidences of disease, the affections of the mucous membranes correspond closely to the lesions found upon the skin.

If the child be born with pemphigus, the mucous membranes show a loss of their epithelial covering; they have a red floor, with but slight, if any, ulceration. This condition is usual upon the mucous membranes of the tongue, the mouth, the fauces, and even far down into the pharynx, producing difficulty of respiration and more or less alteration of the voice. If the disease has not progressed so far, and the child is born with a papular or papulo-pustular eruption, the mucous membranes of the buccal and faucial cavities show ulcerations, from which the epithelium has been stripped, with edges more or less excavated, and a grayish or yellowish-gray floor.

The child's voice becomes husky and stridulous, respiration is impeded, and deglutition difficult. The less advanced the disease is, the less marked are these symptoms; and in those children in whom no symptoms appear at birth, the mucous membranes of the mouth, throat, and tongue present no lesions



whatever, but later on, as cutaneous manifestations make their appearance, slight abrasions are found upon the lips, tongue, and about the angles of the mouth, which invade the skin, producing the fissures which are of so frequent occurrence in cases of infantile syphilis. These usually come on slowly, and the first thing which calls the physician's attention to the child's condition is a difficulty in breathing and an alteration in the voice, which is peculiar to this disease, and once heard can never be mistaken for anything else; the child refuses to nurse as readily as heretofore, and when nursing experiences more or less difficulty in seizing the nipple, owing to the irritation produced by these mucous patches of the mouth and lips.

Concomitant with these symptoms, or appearing shortly after them, the nasal mucous membrane becomes affected, a thin, ichorous discharge, rapidly becoming purulent, flows from the nose, which upon exposure to the air becomes dry and forms crusts. When these crusts are removed, superficial excoriations and ulcerations are found beneath.

This condition goes on until the child, exhausted by its efforts at respiration, becomes worn out, and sinks from marasmus or from malnutrition, in consequence of lesions occurring in the stomach and in the intestinal tract, or in the larger viscera of the body.

If the child under treatment survives this attack, and goes through the first four or five years of extra-uterine life, it begins later on to show more or less pronounced ulcerations of the throat and of the posterior nasal cavities, in the shape either of a chronic catarrh or of infiltration of the soft parts, resulting in ulceration and destruction of tissue.

These changes come on slowly, are attended with very little physical pain, and are only noticeable from the impediment to respiration or deglutition which occurs; but the lesions rapidly break down, and when this happens, as is frequently the case in the soft palate, on the anterior fauces, or upon the posterior pharyngeal walls, the results are deep-seated ulcerations, great loss of tissue, and destruction of important parts.

When the ulcers heal up they produce oftentimes important modifications of these organs, going so far, oftentimes, as to

produce stenosis of the posterior nasal cavities and of the pharynx. These are the cases which, among the older writers, were considered as strumous ulcerations, which refuse to heal up except under the administration of the iodide of potassium or small doses of mercury, and it is curious in this connection to observe that such a careful physician as Sir Astley Cooper noticed this fact without ascribing it to its true cause, and the famous syrup which in the last century went by his name owed its efficacy to the fact that mercury was one of the principal ingredients in its composition.

As the child becomes older, it may present no further evidences of syphilis until the age of puberty is reached. Then a recurrence of the previous symptoms may take place, or else the disease progresses to a later stage, in which not only the mucous membrane covering the hard parts, such as the hard palate and the gums, may be attacked, but the periosteum also becomes involved; this point I shall consider later on when I come to speak of disease of the bones. When the mucous membrane covering the hard palate or the gums is attacked, it usually commences as an infiltration of the parts, attended with no signs of inflammation or pain. The mucous membrane becomes detached from the bone and usually develops superficial ulcerations which are quite extensive, leaving the bone covered with its periosteum beneath. It is very rare, however, that only the mucous membrane is invaded, for in nearly all these cases it is accompanied by periostitis, which leaves denuded bone beneath as soon as the ulceration ensues. Coincident with these lesions periostitis of the nasal bones ensues, which, after necrosis, causes sinking in of these bones and flattening of the nose.

The mucous membrane of the pharynx and larynx is frequently attacked as far as the bronchi, and even the smaller bronchial ramifications of the lungs, as well as the mucous membrane of the stomach. These commence first in the form of catarrh of the stomach or bronchi, producing what is often known under the vague term of syphilitic catarrh of the bronchi or stomach. The symptoms which occur in syphilitic bronchitis are those which are common to bronchitis apart from this cause,—viz.: increased expectoration, some dyspnoea,

and but very slight, if any, cough. Fever is usually absent. The remedies usually given for the relief of ordinary catarrhal bronchitis in these cases seem to be of little avail, and iodide of potassium is the only thing that is of any service. The catarrhal affections of the stomach seldom occur without other forms of trouble in this organ and in the intestines, so that I shall consider them when speaking of the affections of the stomach in order to avoid needless repetition.

One set of organs in hereditary syphilis has received but slight attention until within the last few years, and that is the affections of the lymphatics; not only the superficial, but the deep varieties. They were first spoken of in 1804 by La-mauve in his edition of Mahon ("Traité des Maladies syphilitiques des Femmes en Couche et des nouveau-nés"), in which, when describing the syphilis of children, he speaks of an engorgement of the lymphatics.

In 1810, Bertin ("Traité des Maladies vénériennes chez les nouveau-nés, les Femmes encientes et les Nourrices") described an inguinal lymphangitis in children who are the subjects of inherited syphilis, where the symptoms occur sometimes after the disappearance of other lesions. The glands are indurated, and resemble scrofulous engorgements.

In 1858, Hutchinson (*Medical Times and Gazette*) reported the case of a syphilitic child in which the bronchial glands were infiltrated with fibrinous deposits similar to those found in acquired syphilis.

Von Barenprung, in his work "Die Hereditäre Syphilis," 1860, *passim*, describes enlargement of the mesenteric glands and of the glands about the spleen and the broad ligament of the liver.

Mollière, in the *Annales de Dermatologie et Syphiligraphie* for 1870, gives an account of enlargement of the inguinal, the pre-vertebral, and the mediastinal glands in a syphilitic child.

Casati, of Milan, Campana, of Naples, Rivington, Lance-reaux, Laschewitch, and Doyen have called attention to this condition of the glands in hereditary syphilis. This latter, in the *Archives Générales de Médecine*, gives a record of eight cases of inherited syphilis, in four of which lymphatic enlargements were observed.



The glands involved were the mesenteric, lumbar, iliac, hypogastric, inguinal, thoracic, mediastinal, axillary, and carotid, in fact all the abdominal and thoracic glands. Their tissue was hypertrophied, and they were of a grayish or yellow-white appearance, and under the microscope were found to be infiltrated with cells of a yellowish or grayish-white appearance. In no case, so far as I am aware, has there been any actual breaking down of the tissue, except in those cases where the glands lie superficially and close beneath the integument.

The *thymus gland* is the one to which most attention has been called in this variety of disease, and, although Paul Dubois is the one generally credited with having first called attention to it, it really was observed twenty-five years earlier, in 1825, by Cruvelhier and Véron.

These latter merely called attention to the enlargement of this body in cases of hereditary syphilis. Dubois was the first one to describe it *in extenso*.

Frequently this gland is found of normal size, and not differing externally from a healthy gland, but upon slight pressure it exudes a yellowish-white, viscid, semi-fluid, alkaline substance, which under the microscope shows abundance of pus-cells. Upon section, the tissue of the gland is found to be denser than normal, with scattered deposits of fibrinous exudation.

These exudations may be diffused generally throughout the substance of the organ, or they may be circumscribed into deposits, varying from the size of a bean to that of an English walnut.

If the organ is infiltrated throughout its substance, the exudation that takes place is that described above, as of a yellowish-white, viscid fluid.

When it is circumscribed, however, the infiltrations usually break down in the form either of gummous infiltrations or else as abscesses, which under the microscope show increased cell-growth, with abundance of pus-cells.

*Lungs.*—The bronchi are affected first as a diffuse catarrhal inflammation,—syphilitic bronchial catarrh,—or else exudations occur beneath the mucous and submucous tissues, which

result in suppuration, destruction of tissue, and subsequent stenosis. When the lung-tissue proper is invaded it is usually in a twofold manner: first, as a general infiltration of cellular or fibrinous material, accompanied with a proliferation of cell-growth, in which the tissue assumes a dense or yellowish appearance, which is resistant under section, and produces a creaking sound under the knife, or else circumscribed infiltrations of gummy deposits are scattered throughout the lung-tissue, which deposits are surrounded by a fibrinous exudation varying in size from a small marble to a hen's egg. These growths rapidly soften in their centre, break down, and leave cavities behind them, which resemble very closely the cavities of tubercular phthisis, and when these occur, as they sometimes do, at the apices of the lungs, they may be readily mistaken for tubercular instead of syphilitic affections. If the lesion is seated, as is often the case, in the middle or lower third, the lung undergoes a condition of hepatization, first red, then afterwards changing to a colorless grayish-white appearance, known as white pneumonia.

The pathological condition of these affections is identical with what takes place in the upper portion of the lungs, to wit: An increased cell-growth, with exudation of fibrinous material, and the varieties of so-called bronchitis, bronchial pneumonia, pneumonia, and phthisis are nothing less but different gradations of the same pathological conditions occurring in different portions of the lungs, and depending very much upon the stage at which they have arrived as to whether they remain simply pneumonia or become phthisis. If breaking down ensues and cavities are left behind, they are generally known under the name of phthisis.

*Heart.*—Syphilitic affections of the heart occur as infiltration of the muscular tissue of this organ, either in the diffuse or circumscribed form.

Copland, in the "Transactions of the Pathological Society of London," records a case of interstitial myocarditis in a syphilitic infant of three months of age. The heart weighed one and three-fourths ounces, was square in shape, with a rounded apex; both sides contained clots, and the serous layers composing its walls were perfectly smooth and translucent.

The myocardium was, however, very firm and resistant, and of a uniform, pale pinkish-yellow tinge; the walls of both ventricles and the septum were very thick, and cut with a creaking sound. The microscope revealed extensive infiltrations in all the tissues of the organ of small round cells, imbedded in a structureless matrix between groups and bundles of muscular fibres.

This infiltration was most abundant about the small arteries, but it was by no means limited to their vicinity, for individual fibres were here and there separated by rows of round cells.

The muscular fibres had retained their normal striated appearance, although where the larger tracts of cell-infiltration occurred they tapered off, and were lost within it.

This is what occurs where the infiltration is general and diffuse; where it is circumscribed the pathological conditions are the same, excepting that they are more localized.

Parrot, in *L'Union Médicale*, describes such a lesion. In his case there was a central portion, the color of sepia, around this the parenchyma was of a light yellowish color. In this yellow peripheric zone the muscular fibres were not altered, but between them a large number of round nodules were developed. In the centre, these elements, which were more abundant than elsewhere, instead of being colored red by carmine, were stained yellow. The structure of the muscle was friable, and resembled myeline. Scattered about here and there were groups of cells undergoing granular and fatty degeneration.

The blood-vessels also undergo changes similar to what occurs in the muscular tissues elsewhere. About the serous and muscular coats rows of round cells are found deposited, which result in fatty and granular degeneration, and infarctus of the calibre of the vessels and complete obliteration ensue. Sometimes, however, the softened vessels cannot withstand the pressure of the blood, and rupture and hemorrhage into the substance of the tissue occurs.

*Liver.*—The liver in syphilitic children is the viscus most frequently attacked, and the one which has been best described. Here, also, the division may be made into diffuse and circumscribed infiltrations, precisely as occur in other



organs. The diffuse variety is attended with an enormous increase in the bulk of the organ, infiltration about the vessels and in the cellular tissue of the liver. The viscus is first of a deep reddish color, and later on becomes grayish in appearance. Scattered about here and there are striæ of yellowish matter, which under the microscope are shown to be cells in various processes of degeneration. If the infiltration be recent, these cells are of normal appearance and consistence. As the disease progresses they are found to be the seat of granular and fatty degeneration; the bulk of the liver then diminishes in size. The acini of the liver are compressed, and the organ itself is frequently irregular in shape from the atrophy which has taken place and from the compression produced by thickening of the capsule of Glisson.

In the circumscribed variety gummous deposits, similar to what occur elsewhere, are scattered throughout the substance of the liver. These break down and contain a thin viscid sanguinolent fluid, with the detritus of broken-down tissue; the capsule of Glisson is thickened, and upon contraction produces in this, as well as in the diffuse variety, irregularity in the shape of the liver.

Sometimes these nodules instead of breaking down become the seat of caseous degeneration, in which the walls become the seat of fibrinous infiltration and thickening.

*Kidneys.*—The kidneys are generally the seat of the infiltrated variety of the disease. They are enlarged, pale and flabby in appearance, and are marked by a decided increase of cell-growth, particularly about the vessels, the pelvis, and the parenchyma of the organ itself.

In the circumscribed variety the nodules are those of gummous infiltrations, attended either with or without degeneration of their contents.

Mr. Messenger Bradley reported in the *British Medical Journal* the case of an infant four months old, in which albuminuria and œdema of the upper extremities disappeared under mercurial treatment. The child was the subject of inherited syphilis.

*Spleen.*—The spleen is sometimes found enormously thickened, and distends the abdomen from its increased size. Path-

ologically, it presents the same appearance as does syphilis of the liver and the kidneys.

*Stomach and Intestines.*—The stomach and intestines are affected in common with the other organs of the abdominal cavity. The lesions usually occur as an infiltration and thickening of the mucous, submucous, and muscular coats of the stomach, with superficial ulcerations, and are attended with marked congestion of the vessels. In the intestines the same condition of affairs obtains, associated with marked ulceration of Peyer's patches, attended with congestion of the vessels.

Chiari, in the *Prager Medizinische Wochenschrift* for 1885, H. Mraček, in the *Vierteljahrschrift für Dermatologie*, describe cases where infiltration of the coats of the stomach attended with ulcerations of the glands occurred, going in one case so far as to produce perforation of the intestines.

Oser, of Cracow, has described two cases where he found in the intestines numerous small ulcerations, some of which corresponded to Peyer's patches, others to the isolated follicles. The serous membrane was covered with exudation, and there were exudations on the peritoneum.

In the second case there were found in the stomach and small intestines a large number of small white nodules, which were firmly adherent to the muscular coat of these organs. In all three of these cases microscopical examination showed a very abundant exudation of small cells into the submucous tissue, with decided thickening of the walls of the vessels and of the connective tissue.

The peritoneum is oftentimes the seat of a fibrinous exudation with thickening of its tissue, and adherence to the liver, intestines, or under surface of the stomach.

*Gall-Bladder.*—The gall-bladder is oftentimes the seat of thickening of its walls, with cell-infiltration of the vessels; especially of the ductus choledochus and hepaticus.

*Bladder.*—Very little is known about affections of the bladder in congenital or hereditary syphilis. Thickening of the mucous and serous coats, with infiltration of cell-growth, have been found in the bladder in cases of infantile syphilis. This probably belongs to the diffuse variety of infiltration.

*Testicles.*—Affections of the testicles in inherited syphilis

have been described by Henoeh in the *Deutsche Zeitschrift für Praktische Medizin* for 1877, and by Hutinel in the *Revue Mensuelle de Médecine et Chirurgie* for 1878, in which the testicle was enlarged, hard, and painless. Infiltration occurs in the body of the testis itself and not in the epididymis. This latter nearly always escapes.

In the seven cases observed by Henoeh, four showed lesions of both testes, three of the left one; the children ranging from three months to two and one-half years old.

The infiltration commences about the periphery of the arterioles of the testis. This is followed by increased cell-formation and general infiltration of the organ. This is more common than the circumscribed variety, which appears in the form of small nodules set in the body of the testis, and which usually undergo fatty and granular degeneration.

In the diffuse variety, the seminiferous tubules disappear by compression, and the whole organ is converted into a hard, fibrinous mass.

The progress of the disease seems to be divided into three stages,—first an exudation about the vessels, second an infiltration and the thickening of the interstitial tissue, and finally strangulation and obliteration of the seminiferous tubules.

Affections of the testes, apart from syphilis and tuberculosis, are so rare in children that when they occur they may nearly always be ascribed to either of these two causes, and in syphilis the infiltration which occurs, the enlargement of the testis proper with no participation of the epididymis, the rarity with which the infiltration breaks down, and its slow course mark pretty clearly the dividing line between these two affections.

The penis in grown-up subjects of inherited syphilis is often found small and undeveloped in size, and the growth of hair upon the pubes is scanty. There is little virility, and the seminal fluid is found to be either wanting in spermatozoa or else they are few.

In women the arrest of development is quite as marked. The genitals are in an undeveloped condition, the mons is but scantily furnished with hair, the vagina is small and narrow, rather resembling the vagina of a young girl than a grown woman, and menstruation is much delayed, indeed is sometimes



absent, as in the case reported by Lancereaux, "*Traité de la Syphilis.*" The patient, a woman of forty-one years of age, had never menstruated, and at the autopsy the following condition of things was found. The genital organs were not more developed than those of a girl of ten years old. The ovaries were rudimentary and showed no Graafian vesicles, and the vagina was so narrow as to have rendered sexual intercourse a physical impossibility.

In cases where menstruation is never established the uterus is found to be in a rudimentary condition, and where the ovaries are undeveloped we need look no further for the cause of the absence of the catamenia. The ovaries are sometimes attacked with subacute inflammation, as has been described by Parrot.

In common with the rest of the generative organs, the mammæ also share in the lack of development. Schwimmer gives the details of one case in which the mammæ were scarcely developed, the genital organs were completely atrophied, the mons veneris was almost devoid of hair, the hymen was intact, and the vagina was very narrow, scarcely admitting the finger. The patient presented the appearance of a girl of fourteen. The catamenia in this case were said to have appeared only once, at the age of twenty-one.

*Diseases of the Nervous System.*—These may occur either early or late in the course of the disease. One of the earliest manifestations is that known as hydrocephalus, where the child's head is enormously distended with fluid and in which the forehead is bulging. The infant is unable to hold its head up, which usually droops forward, giving it the appearance of being top-heavy. This distention is sometimes in the antero-posterior diameter, sometimes in the lateral, and according as it be one or the other, the child's head droops forward or sideways. After death, the membranes of the brain are found to be distended with fluid in the spaces between the membranes and in the ventricles, associated with gummous deposits in the brain-substance itself. This form is usually associated with severe disease elsewhere, either of the skin or viscera. During the earlier years of the infant's life it may be attacked with convulsions, which are usually fatal, depending on some

deep-seated lesion of the brain or spinal cord. Another affection of the nervous system which occurs during early life is chorea. When present during infancy it is usually associated with other lesions, which at once establishes its true nature, but it may also occur later in the child's life, and if it be the only symptom present its syphilitic origin is overlooked and it is ascribed to other causes.

The membranes of the brain are also the seat of infiltrations of gummous material, which are generally confined to the dura mater, although the pia mater may also be involved. These lesions during the child's life induce nervous symptoms, such as convulsions, or a condition which closely simulates cerebro-spinal meningitis. Chapin, of New York, has reported in the *American Journal of Obstetrics* for 1883 a very interesting case of the kind. The subject was an infant seven weeks old. "He was born in an apparently sound condition at eight months. He continued healthy for two weeks and four days, when red blotches appeared, first on the buttocks, then on the arms and face. The snuffles appeared when he was one month old. On examination the skin was found to be covered by copper-colored stains, with the bullæ of pemphigus on the hands and feet. The nose was somewhat flattened at the bridge, with coryza well marked." The history of the parents seems to have been vague. The child was treated with mercury and apparently thrived, when about October 10, nearly two months after his birth, "his neck got very stiff, and the head was thrown back. Temperature 102°. He was put upon small doses of the bromide and iodide of potassium. October 17, temperature 100°. The head is much retracted, and the baby cries when it is pressed forward. The fingers are clinched, with the thumb tightly bent over the hand. A lighted match being held near the eye attracts no attention. The head is not hot, and the anterior fontanelle not prominent. October 18, the baby seems better, but will not nurse. No rash except the faded coppery blotches of syphilis, and no red mark left upon drawing the finger over the skin. There was also no apparent hyperæsthesia of the skin. October 19, the baby still refuses to nurse, but took a little sugar and water. About 8 A.M. he began to get very cross,

and bore (*sic*) his head in the pillow. He continued to roll his head from side to side until 10 A.M., when he was seized with convulsions. He went from one to another, and died in one of them.

"The autopsy was made October 20. The child was very well nourished, with no signs of specific cachexia except a slight coppery discoloration of the skin. There was no dusky mottling of the skin, so often seen in cerebro-spinal fever. The brain was quite soft, with no hyperæmia nor exudation at the vertex. The ventricles were distended with serum. There were thick patches of fibrin and pus at the optic commissure, fissure of Sylvius, and the under surface of the anterior lobe and middle lobe, also upon the anterior surface of the medulla oblongata. The under surface of each lobe of the cerebellum had quite a large patch of exudation.

"The spinal cord was taken out entire. On slitting up the dura mater the posterior surface was found to have a continuous layer of thick exudation extending from the medulla to the cauda equina, and including the latter. The anterior surface had a thick layer extending from the medulla about half-way down, where it grew thinner and disappeared. There was then a space about six lines in extent in which there was no exudation. It then began again, and extended to the end of the cord. With this exception the whole cord was completely encased by the exudation. The heart, lungs, liver, spleen, kidneys, stomach, and intestines were examined and found healthy."

In his comments upon the case, Dr. Chapin believes it "extremely improbable" that the meningitis was due to the syphilis, but from this view I should be disposed to dissent. In the first place, the child's age is an unusual one for an attack of meningitis. Next, the temperature was never very high, not over 102°, and receding from that point to 100°. Third, as the doctor himself observes, the mottling of the skin usually seen in cerebro-spinal meningitis was entirely absent throughout the child's illness. Fourth, the anterior fontanelle showed no prominence. The fact that the viscera showed no evidences of syphilis would not militate against the view of syphilis being the cause of the meningitis, because the disease



was still in the early stages when lesions of the viscera would not be so likely to occur. The point raised, that "syphilitic accidents of the cord and its envelopes are rare compared with similar affections of the brain and its membranes," while in the main true, is no proof that they never occur, because such lesions are found in inherited syphilis. I am inclined to regard this case as one of syphilitic meningitis of the cord, and to attribute an important part to the syphilis. It is to be regretted that no microscopical examination was made of the cord.

There is a peculiar kind of paralysis sometimes seen in syphilitic children, occurring in the upper extremities and associated with an affection of the bones. Henoeh, in the *Berliner Klinische Wochenschrift* for 1881, cites a case which occurred in a child aged two months, in whom both arms, especially the left, were paralyzed. The lower epiphyses of the humerus were markedly swollen. After ten days of anti-syphilitic treatment the paralysis disappeared. Henoeh regarded the affection as one due to a probable exudation in the cervical region of the cord, contrary to Bednar's view that it was due to a muscular affection.

Rotch, of Boston, in the *Boston Medical and Surgical Journal* for 1886, records a case which came under his care, in which the patient was six weeks old. No evidences of syphilis were found on the mother; the father was said to have had a sore a year before the child was seen. The child was the only one, was breast-fed, and was healthy at birth. When it was one week old the child was reported to have had a bullous eruption on the soles of the feet, the legs, the palms of the hands, arms, body, and face, and began to have snuffles. Three days before the child was seen the left arm was noticed to be paralyzed. On examination the face was found to be covered with reddened patches, ulcerations, and crusts. The arm hung helpless by the side, and the child seemed to be sensitive to the touch and to have pain. The oleate of mercury (twenty per cent.) was ordered spread on a flannel abdominal band. When seen ten days later the right arm was also helpless, and the mother stated that the inunction had not been used much, as it caused excoriation. The ointment was then reduced in

strength one-half, and hydrargyrum cum creta, one grain, given three times daily. In three days the paralysis of the arms disappeared, though the other symptoms continued. April 21, the eruption had disappeared almost entirely from the face, but as the snuffles continued the mercury was increased to four grains daily; this had to be reduced to three grains later, as it caused a slight diarrhœa. After continued treatment for several months the child's symptoms entirely disappeared, except the squamous eruption on the hands and feet."

In both Henoch's and Rotch's cases one point strikes the reader at once, and that is the rapidity with which the paralysis disappeared. It would seem to militate against the view held by Henoch that it (the paralysis) was due to some spinal lesion, and this view is still further borne out by the concomitant swellings which occur of the epiphyses of the humerus, because this swelling might readily cause paresis of the brachial nerve. Indeed, these cases are cases of paresis rather than true paralysis. In Roque's case, quoted by Rotch, there was apparently the same affection of the epiphysis of the humerus which was present in Henoch's case.

Epileptiform attacks are not infrequently seen in children who have inherited syphilis. Dowse, of London, in the *Lancet* for 1878, gives a case of a girl æt. twelve, who, up to and inclusive of her fifth year, showed no signs of syphilis: At that time she suffered from ozæna and ophthalmia. At ten years of age she had an attack of unconsciousness which lasted for four hours. Later on she had other nervous attacks, cephalalgia, epileptiform seizures, diplopia, anosmia, anæsthesia of the left side of the face, paralysis of the right motor oculorum and of the left facial nerve, associated during the last days of life with aphasia and slight paralysis of the right arm.

At the autopsy, adhesions of the dura mater to the parietal portion of the brain, gummata in the right superior parietal lobe and on the left side in the posterior parietal lobe. The arteries of the base of the brain were the seat of an endoarteritis. The left trigeminal and facial nerves were thickened, swollen, and of a rosy color.

As is seen in this case of Dowse, aphasia may also result

from inherited syphilis, and in addition dementia and idiocy are laid to the door of this disease. Drs. Bury, of Manchester, Critchett, of London, and Lancereaux, of Paris, have reported cases of the kind.

In addition to these general affections of the nervous system, localized troubles occur in special nerves. Thus the third, fourth, fifth, sixth, seventh, and eighth pairs of nerves may be affected, an interesting instance of which has been reported by Dr. Barlow in the *Lancet*. Mr. Nettleship has also reported a case in which the patient, a girl, had paralysis of the third and sixth nerves on the right side and partial anæsthesia of the skin, supplied by the first and second divisions of the fifth nerve on that side. In this case there were no brain-symptoms.

16 WEST THIRTY-SECOND STREET, NEW YORK CITY.

(To be continued.)

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## ON CHOREA, SPASMODIC TIC, AND HYSTERICAL SPASMODIC DISORDERS OF CHILDHOOD.

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THE subject of the etiology, pathology, and treatment of the chorea of Sydenham has been most thoroughly studied and is now a decidedly well-worn topic. I shall therefore only incidentally touch upon it; and in doing so shall simply place on record the results of my observations in one hundred and thirty cases of chorea occurring in one hundred and eighteen persons, of which I have notes. Such local statistics have some value, since it has been shown that very considerable differences exist in the clinical features of chorea, according as the cases occur in England, France, Germany, or this country.

The matter to which I wish to call especial attention, however, is the relation of common chorea, or chorea of Sydenham,



to hysterical spasms in children, and also to those disorders called by French writers *spasmodic tic* (*tic convulsif*).

It has seemed to me that under these heads we can (excluding epilepsy) include all the chronic functional spasmodic troubles of children at least, and also that the existence of these types is not very well recognized or their different clinical characters thoroughly appreciated. It is the common practice, I think, to call all of them chronic chorea or choreiform spasm, or else to attach a symptomatic name which means nothing.

The number of apparently different forms of chronic functional convulsive disorders is very great (Lannois describes seventeen), but they can nearly all be placed in the categories mentioned, and much clearer conceptions are gained thereby of their nature.

An idea of the grouping which I propose is given in the appended table. In preparing it I must acknowledge my indebtedness to Lannois, "*Norogrephi der Chorees*," Henoch, and to suggestions from Dr. E. C. Seguin:

I. Common Chorea, of Sydenham, subacute and chronic:

This has (a) ordinary spasmodic form;

(b) paralytic form;

(c) chorea mollis;

(d) psychical? and (e) sensory forms?

All but (a) and (b) are very rare.

II. Tic Convulsif:

(1) Ordinary inco-ordinated forms,—

*e. g.*, (a) jumpers, myriachit, latah,

(b) with echolalia, coprolalia, and

(c) chorea of inspiratory or expiratory muscles (chorea of larynx or diaphragm, so called) and saltatory tic;

(d) affecting facial, spinal accessory, etc.

The above groups are often associated with each other:

(2) Co-ordinated *tics*,—

"Habit chorea." Various nervous habits of speech and gesture.

## III. Hysterical (and neurasthenic) Spasms:

## (a) Reflex saltatory chorea;

Spasmus nutans;

Oscillatory chorea;

Chorea major.

I. *Common chorea* is a disease chiefly of childhood. It comes on, as a rule, rather slowly, increases in severity for a few weeks, gradually declines, and runs its course in two to four months. It affects the body unilaterally, the face, arm, and leg of one side being more involved than those of the other. There is not only spasm but paresis, and there are accompanying characteristic mental changes. This disease is caused by an irritant and depressing agent acting on the central gray matter of the cord, especially the postero-lateral parts, and on the basal ganglia, motor cortex, or pyramidal tracts. This agent may be an infection, or a self-generated humoral poison, or a mechanical substance like an embolus. The anatomical change is an active hyperæmia, which may be accompanied with slight extravasations or spots of softening. Such is the ordinary chorea of Sydenham.

This may become chronic, and then it shows much the same characters clinically.

Chorea is hardly to be considered a neurosis, but rather a specific infectious or toxic disorder, which attacks a definite area of the nervous system. Its pathogenetic agent is perhaps allied to that of the irritant agent in rheumatism.

II. *Spasmodic tic* is a disease to which the name of chronic chorea is often given, but, as I think, incorrectly. It is a very chronic disorder, and shows itself in the form of quick electric-like spasms of the nerve or nerves supplying certain groups of muscles, or of branches going to a single muscle. The spasmodic movements are violent, and several rapid contractions succeed each other, after which there is a period of rest. The spasm in most forms has a tendency to become localized in certain nerves, especially the facial, or even in a single branch or twig, as that of the orbicularis, the zygomaticus, the phrenic, or the branch to the tensor tympani (Blau, *Ann. des Mal. de l'Or*, 1879). Tic convulsif some-

times involves the muscles of expiration and larynx, when it has been wrongly called chorea of the larynx. The convulsive movements may, however, take a wide range and affect a number of groups of muscles, producing quick, violent movements of the body.

Such cases have been called electric chorea. Such use of this term, however, is confusing, to say the least. Electric chorea is a name given by Dubini in 1846 to a peculiar and progressively fatal spasmodic affection which has been observed almost solely in Italy, and which is perhaps of a podagrous or malignant malarial origin. M. Bergeron in 1880 also described an "electric chorea" in which the patients are attacked by sudden rhythmical spasms. This latter disease has a uniformly favorable course. Neither of these diseases resemble true chorea, nor do they have the character of the *tics*.

The term electric chorea, therefore, is one that should be only used, if at all, with a qualifying explanation.

Henoch recognizes the distinctive character of this affection, and separates "electric" chorea from common chorea.

These spasmodic tics of wide range are sometimes accompanied with explosive disturbances of speech. In such cases the patient at the time of the convulsive movement utters some obscene or profane words (*coprolalia*), or involuntarily repeats the last words of the sentence spoken to him (*echolalia*), or spasmodically imitates a gesture made to him (*echokinesis*), or involuntarily exclaims the thought uppermost in his mind, perhaps revealing some secret against his will. The term *tic de pensée* gives some idea of the nature of these acts.

A case of this kind has been reported by Dr. W. P. Wilkin and myself, and recently by Dr. Seguin.

These cases often show ordinary choreic twitchings; they may even begin as true chorea, but they differ, I believe, essentially in pathology and course. Because the spasmodic tics may begin like chorea it does not follow that they are identical with that disease.

It is admitted that chorea and tic are often very closely allied, and appear at times to shade into each other, but the same may be said of some other neuroses, like hysteria and epilepsy. Yet these diseases are not identical, and I think



that the typical cases of spasmodic tic and true chorea stand widely apart.

I am not very partial to diagnostic tables, as they generally present the form without the soul, but as I am anxious to justify myself in my present argument I present a summary of the distinctive points here:

TIC CONVULSIF.	CHRONIC CHOREA (OF SYDENHAM)
1. Neurotic history the rule.	1. Not so frequent.
2. Occurs in adults oftener than does chorea.	2. Occurs chiefly in children.
3. Is chronic from the start.	3. Begins as a subacute affection, and generally runs a definite course.
4. Tends to localize in single nerves or groups of muscles, and is never "hemiplegic" in type.	4. Is general, and as a rule affects one half the body more than the other. Is of hemiplegic type.
5. Mental symptoms do not develop as part of disease.	5. Mental symptoms do develop.
6. No paresis or paralysis.	6. Some paresis present.
7. Is more allied to hysteria.	

If I am asked what tic convulsif is and what is gained by distinctions such as I desire to establish, I should say that tic approaches more nearly to hysteria, and may be looked upon as a connecting link between common chorea and the rhythmical or co-ordinated spasms of hysteria, for tic indicates an involvement of higher centres, nearer in grade to those involved in the latter disease. This is shown by the fact that tics in children are more under volitional control and can be modified often by training, while the spasms themselves cease as a rule when the child's mind is very actively interested. The presence of tic is a much surer sign that the patient has a neurotic constitution or bad or hereditary history, and the worst tics occur usually in neuro-degenerative families, or among what the French appropriately call the *dégénérés*.

As for the pathological anatomy we know nothing. Some local spasms called tics are due to rheumatic, toxic, neurotic, or traumatic causes. These are really cases of a symptomatic character, and do not belong properly to the constitutional neuroses under consideration. A child may catch cold, for example, and have a rheumatic wry-neck. The appearance is the

same, but the disease is very different when a neurotic person develops a spasm in the same set of muscles.

III. I do not propose to go into the subject of hysterical and neurasthenic spasmodic disorders, since it is admitted that they are quite distinct from chorea. The term chorea major has been applied to one class of them, but the name is a bad one. Hysterical spasms are generally rhythmical or co-ordinated, and involve a wide range of muscular system. The trochaic chorea of Laycock, some cases of nodding spasms, oscillatory spasms, and dancing spasms, belong to this class; so also do the saltatory spasms and probably paramyoclonus multiplex.

Without going further into details I propose to illustrate the points in question with a few briefly recorded cases. These cases represent the minor types of tic and hysterical spasms, and also show how they may complicate true chorea.

The tics that are ordinarily met with and recognized are those affecting the facial and spinal accessory nerves. Many of these, however, as already stated, are only symptomatic, and do not express the existence of a constitutional neurosis.

I have, however, met a good illustration of a tic of the spinal accessory which was transmitted to the next generation.

CASE I.—The patient was a woman in middle life, mother of a large family, of neurotic history, but in good general health. Since maturity she had suffered from attacks of rhythmical contraction of the right sterno-cleido-mastoid, and perhaps of some of the deeper rotatory muscles of the neck. These attacks only came on when a little excited, when speaking to strangers, etc. Then half a dozen sharp contractions would take place, followed by relaxation, and after a few moments a renewal.

The affection was exactly reproduced in a son when he reached maturity, but to a less degree, and in the latter case it lasted but a few years.

Another peculiar form of tic was one affecting bilaterally the nerve supplying the platysma myoid.

#### SPASMODIC TIC OF THE BRANCHES OF THE FACIAL SUPPLYING THE PLATYSMA MYOIDES.

CASE II.—Robert C., United States, single, twenty-eight, laborer. Family history shows no neurotic element. Patient

was a healthy man except for present disease. Has drank and smoked to some excess; had a chancre, but no secondary symptoms; has masturbated excessively for ten years. Suffered from the present spasmodic trouble several years ago, but recovered.

In the spring of 1885 he began to suffer from dyspepsia, great nervousness, and twitchings in the muscles of the neck. When seen by me, in April, 1885, he showed no special signs of malnutrition, and examination revealed no organic disease anywhere. His prominent symptom was a violent twitching of the platysma myoides on each side of the neck, the spasm wrinkling up the skin of the neck and chin in a curious fashion. The two sides were affected about equally, but not always at the same time. There would be several successive quick twitches, followed by an interval of rest. The sterno-cleido-mastoids were not involved at all, but there were occasionally twitches of the muscles of the mouth and eyes. There were no paralysis, pain, or other sensory disturbances. He complained occasionally of feelings of faintness and shortness of breath. The man was of rather low degree of intelligence. He was not improved by arsenic, or zinc, or mixed treatment, but did improve somewhat under bromides, tonics, and electricity.

I have observed a curious case of rapid oscillatory movements of the head in a child somewhat like that usually attributed to meningeal congestion.

#### OSCILLATORY SPASM OF THE HEAD.

CASE III.—Mary W., age one and one-half years. Father a drinker, mother healthy. The child has been perfectly well except for the spasmodic movements. These began when she was six months old, and have continued ever since. The head is moved rapidly but not violently from side to side at the rate of eighty to one hundred times per minute. After a half-dozen movements there is a short cessation. The movements are greater when the child is excited and when she bows her head. They cease during sleep. There was no nystagmus or apparent visual trouble, or any choreic movements. I saw the child for several months, and there was no change in her condition.



The child was bright, plump, and healthy, with a well-shaped head.

My friend, Dr. Wooster Beach, described a similar case which he had met and in which the patient finally recovered, chiefly under moral treatment. He considered it, correctly, I think, a kind of choreic habit or *tic coördiné*.

*Rotatory Spasm.*—A case of rotatory spasm was described by Dr. M. Putnam-Jacobi in the *Journal of Nervous and Mental Diseases*, 1880, but of a different character to this. The literature of this special subject is also given by the writer referred to.

. The cases of rotatory spasm or oscillatory chorea reported have generally been forms of the salaam spasm, or eclampsia nutans, and they are all violent rhythmical spasms of a hysterical and neurasthenic, or perhaps sometimes organic, origin. Some of them are called alternating spasms, because the contraction of the flexors causes a tension of the opposing group and a resulting contraction of it, and so the spasm alternates.

*Oscillatory Chorea.*—I do not think that my cases just cited belong to this category, and conclude that the functional oscillating spasm of the head may be either a *tic coördiné* (or choreic habit), or of a hysterical character. Jones relates the case of a young girl of fourteen who at exactly one P.M. every day would have violent oscillating movements of the head, which gradually increased in rapidity until her features could hardly be distinguished. The attacks lasted for two hours.

The rolling of the head in children is generally considered a sign of meningeal irritation or cerebral congestion.

*Saltatory Spasm.*—There is a disease which is known as saltatory spasm, or reflex saltatory cramps. It consists of attacks of violent and generally rhythmical contractions of the lower limbs, brought on by contact of the feet with the ground. In the cases described the patients were usually adults, and hysterical symptoms were often observed in the course of the disease. This form of spasm, therefore, when functional, belongs to the hysterical, rhythmical, or altering class.

*The Jumpers.*—The spasmodic disease, to which I have already referred, known as that of the jumpers, is not the saltatory spasm, but is one of the tics. It may occur in a milder

form among children, perhaps associated with or brought on by ordinary chorea.

Dr. Handfield Jones has given an illustration of this kind of tic following chorea ("Functional Nervous Diseases," p. 390).

(To be continued.)

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## CONTRIBUTION TO THE STUDY OF CEREBRAL ATROPHY IN INFANCY.

*Read at the meeting of the Section on Pediatrics of the New York Academy  
of Medicine, January 25, 1888.*

BY A. SEIBERT, M.D.

### I.

THE study of the diseases of infancy and childhood has been and partly is yet the Cinderella among the different branches of medicine. The very fact that this meeting of the Section on Pediatrics is the first of its kind in this academy, and, no doubt, one of the first of its kind anywhere, goes to prove this statement. And if that be so, then the study of the cerebral disturbances in children is the Cinderella of pediatrics, especially those classified under the head of paralysis. From the time when the president of this academy published his observations on the "etiological and prognostic importance of the premature closure of the fontanelles and sutures of the infantile cranium," twenty-nine years ago, up to the most recent publications on this and kindred subjects, the progress of our actual knowledge concerning them has been very slow in comparison with the other branches of pediatrics. No doubt the chief reason for this deficiency has been the want of interest in so unpractical a subject and the want of publications of good clinical observations,—observations which are more frequently met with in private and dispensary practice than in hospital wards, and altogether more often encountered than usually supposed. With these facts in mind, I shall to-night endeavor to con-

tribute, on a small scale, of course, to our knowledge of some of the forms of cerebral atrophy in infancy.

In the fall of 1885 a female child, aged two months, was brought to our department at the German dispensary. The parents were healthy, no syphilitic nor tubercular taint. This baby was the seventh child of its mother, who had also had two miscarriages. The mother states that during her last pregnancy she *hardly ever felt life*, and then only very indistinctly. The birth of this child was quick and easily accomplished. The umbilical cord was twice wound around the child's neck, the child itself was asphyxiated to such a degree as to require considerable beating and shaking before the normal respiratory movements were restored. The baby at birth was very small and flabby, in spite of full term, contrary to all the other children of the family, who were well developed. In the first week this baby never opened its eyes, and in the first two months it never stirred nor cried, not even when washed. Attempts to move the head were never noticed. When about two and one-half months old the child was first seen by me. It then suffered from a capillary bronchitis, from which it recovered. During the next ten months I observed the child, and as its symptoms and manners mostly remained the same, I can sketch a picture of them as they appeared at a demonstration of the child (then eleven months old) at the house of Dr. A. Jacobi:

We notice a child, small for its age, lying on its back in a manner which at once proves a weak condition of the muscles. The skin is withered and wants the fresh tonus peculiar to childhood. Rachitis is absent, no craniotabes. The marked protrusion of the lower ribs of both sides is found to be due to excessive diaphragmatic breathing, and the atrophic condition of the intercostal muscles. The skull is not particularly large, the fontanelle is still open and not bulged out. The eyes show narrow, even pupils, the eyeballs move in constant nystagmus, especially marked during difficult respiration. The eyes will follow any bright object held before them, but this is not accompanied by mimical action (as in healthy children of that and even earlier age), so that *looking* in this case may well be described as being a dreamy, vacant stare. This symptom is



markedly illustrated by the statement that at no time did the hands and arms move in the attempt at securing the objects looked at. On lifting the head, resting on the mother's knee, it immediately falls back upon its resting-place, without the slightest resistance. On holding the trunk upright we notice the head falling to whatever side the greatest incline exists. While inspecting the outer thorax we notice a deep furrow, corresponding with the line of insertion of the diaphragm, an unusual proximity of the intercostal spaces and the diaphragmatic respiration. During three attacks of bronchitis this mode of respiration was so marked that the former suspicion that the intercostal muscles took very little part in it in this case could evidently be verified. The heart seems normal. The abdomen is somewhat distended, digestion is fairly good. All the muscles of the neck are poorly developed, so much so that they appear as thin strings or cords to the touch. The muscles of the back of the neck are slightly contracted. Those of the extremities are also in a poorly developed state, and the skin covering them appears too large for its contents. The movements of the child are very peculiar. The arms are fairly thrown or thrust about, and this is the only intelligent motion, apparently for the purpose of bringing the fingers to the mouth, which generally succeeds after several futile efforts. Occasionally the lower limbs are drawn up, but only to be dropped down immediately again. The child cannot sit or stand, showing in all an almost entire absence of muscular power and a want of the sense of co-ordination and touch. The reaction to the galvanic and faradic currents appear to be normal. The tendon reflex is somewhat lowered. The joints are extravagantly movable and loose. The hands and fingers can be doubled over towards the dorsum of the arm. Of course, the child is unable to speak, and apparently very deficient in intellect. There have never been any convulsions, either partial or general. The size of the child has increased, but any other change in the general condition of the little patient could not be noticed by me, in spite of a careful observation lasting nine months.

In looking over the symptoms of the case we find a want of functions of the apparatus of thought as well as that of

motility, and also a deficiency of the connecting links between these apparatus. Consequently, we are obliged to locate the original troubles of this child in the brain, and, further, must logically infer that these deficiencies must be evenly distributed in this organ. This taken for granted, we can diagnose an atrophic condition of the brain.

How, then, was this condition brought about? Is it due to defective evolution in foetal life, or to intercurrent disease, either ante- or post-partum? Of the brain-lesions best known to us only two processes can here come into consideration, meningitis and hemorrhage. Meningitis we may at once dismiss from our calculation, as there is no history whatever of it during life, and meningitis in utero has to my knowledge so far never been known.

Intermeningeal hemorrhage may be thought of, but the even distribution of the brain-lesion does not favor this view, unless we take it for granted that an enormous hæmatom, which covered the convexity of both lobes, was present. The asphyxia at birth, the sleepiness lasting weeks, the want of crying, and other signs of depression might be forwarded to support this argument. The narrow pupils and the pronounced nystagmus are indeed particularly characteristic of undue pressure within the cranial cavity coming from the periphery. At the above-mentioned demonstration of the then living child, the majority of the gentlemen present were inclined to favor this diagnosis. To me this view did not cover all the symptoms, and those it appeared to cover were hardly so developed as would be expected of a large clot of blood pressing on the brain! If there was a clot, or organized fibrin, it was but natural to suppose, nay, to expect with certainty, that its pressure would be more felt in that locality in which its diameter was greatest, or where the primary lesion occurred, and, naturally, we would have noticed one or more symptoms in this case (hemiplegia, for instance) supporting this idea. Furthermore, the symptoms are not all covered by this assumption. We must recall to memory (1) *that the mother hardly ever felt the child moving during gestation*, and (2) *that the child's body was small, flabby, and atrophic when born!* To my mind the same cause which produced this atrophic con-

dition of the trunk and the extremities *before* birth, also caused the deficiency of the nerve-centres, thus dismissing hemorrhage as out of the question.

All the symptoms in this case taken together, we must admit of an atrophic condition of the whole body, brain included, at the time of birth and before birth! Remember now that the umbilical cord was twice wound around the child's neck, so as to almost result in death by asphyxia, and that the muscles of the neck were more atrophic than those of other regions, so markedly that they presented themselves to the eye and touch as strings and cords. Death of the fœtus by hanging in the umbilical cord is not so rarely met with, and in these cases the atrophy of the cervical muscles is constantly found! Besides, we know of cases (as cited by Shroeder) of deficient development of part of an extremity to such an extent that even the bones were retarded in their growth, and all due to pressure of the umbilical cord. In our case the muscles of the neck were those *least* developed, and this can only be accounted for through the direct pressure of the cord tightly wound around them! Now, then, if this pressure was able to retard the growth of muscles, then, certainly, the blood-vessels underlying and running alongside of them must have suffered from this pressure, and, necessarily, those parts which were fed by them, namely, the head and its contents! If an arm or leg can be deterred in growth by pressure upon a given place, why will this observation not hold good for the head, whose contents are yet more sensitive to any deficient supply of nourishment? In glancing over the leading literature on cerebral atrophy, I find no allusion to any similar theory, thus a theory of my own, justifiable by the facts, and at least good enough until supplanted by something better. To my mind the asphyxia and following somnolence was due to a suddenly produced hyperæmia of the brain, in consequence of the relaxation of pressure upon the blood-vessels bringing and carrying blood to and from the skull and its contents.

At the age of fourteen months the little one died of a new attack of capillary bronchitis. On February 24, 1885, I made the post-mortem examination, with the following result: No traces of meningitis, hydrocephalus, tubercle, or hemor-



rhage. The convolutions and fissures appear normal. On cutting, the layer of gray substance is found to be abnormally thin all over the lobes. A microscopic examination revealed nothing abnormal. Dr. B. Sachs, in the *Journal of Nervous and Mental Diseases*, September, 1887, published the case of a child, two years of age at the time of death, which presented strikingly similar symptoms, and in which the author found marked changes in the structure of the small and large pyramidal cells,—changes which seem to be the result of arrested development, by some cause unknown to the author.

All in all I have seen four cases of congenital atrophic condition of the brain during a ten years' service in the children's department of our dispensary, but only in this one was I enabled to get a full clinical history and to verify the diagnosis by a post-mortem examination.

## II.

The second form of cerebral paralysis is more frequently met with than the first, but as yet I have failed to find a full description of it in the text-books, and Steffen, in Gerhardt's *Cyclopædia*, only mentions it as being very rare. No doubt many a one of this kind is looked upon as a member of the large flock of essential infantile paralytics, which name covers all sorts of paralysis, cerebral like spinal, with its protecting label.

CASE I.—This child was demonstrated by me April 24, 1885, in a meeting of the staff of the German Hospital and Dispensary, with the following history: Female, aged fifteen months. Parents healthy. No syphilis. Third child of its mother. The oldest one is strong and hearty, the second died aged nineteen months, of convulsions. Its head had been large, and a doctor had spoken of water in it. This older child was weak in its muscles from birth on; could not hold its head up, nor sit alone; never smiled and never learned to speak. Our little patient was bright, active, and strong during the first six months of her life. Then it was taken ill with fever. Slept for three days so that it could not be roused. Regained consciousness then, but was ill in all about four weeks. But

even then the child never became itself again. It had turned apathetic, and showed not the least interest in its surroundings. Active mobility of all the voluntary muscles had almost completely vanished. The mother was positive that the child did not recognize her and never showed the slightest interest in her. Besides, it never cried nor showed signs of hunger, while the appetite was good as well as the digestion, and the baby's appearance remained sound and plump. *Status præsens*.—Fat, well-nourished child of normal size. The head, back, and extremities rest languidly upon the knees of the mother. Now and then a shrill laugh and a spasmodic elevation of an extremity is noticed. The skull is normal in shape and size, the fontanelle not entirely closed. No rachitis. Head falls down on elevation; child cannot sit or stand, and cannot hold anything in its hands. Muscles flabby and weak, of normal reaction. Sight and hearing very indistinct. This condition remained the same until the patient was two years old, during which time her digestion never failed. Dentition went on normally, and also the growth of the body. Death was caused by convulsions during an attack of pneumonia, not under my care. No post-mortem.

CASE II.—A boy, sixteen months old, was brought to our department in July, 1885. He is the fourth child of his mother. His father is sixty-eight years old, but healthy. Mother never took medicine in her life. No miscarriages, no syphilis. When born her boy appeared well developed, his head somewhat large. When three months old he had four teeth. Always proved to be a quiet child. When nine months old he was taken ill with brain fever, lasting three weeks. After this attack the following status remained: Lean, shrivelled child; no rachitis; somewhat large head; protruding forehead; fontanelle open but not bulging; deep-seated eyes; strabismus convergens; pupils small and even; reaction only on very strong light; child almost blind; mouth continually wide open; apathetic, idiotic facial expression; almost complete paralysis of all voluntary muscles; arms moved only by slinging; each hand presents an additional sixth finger and each foot an additional toe.

Shortly after seeing the child first it died of heart-paralysis,

after severe enteritis. Post-mortem : Large skull, fontanelle depressed ; dura and pia adhere in many places ; pia is infiltrated, thickened, and not transparent ; its blood-vessels enlarged and filled ; below the pia we notice a dirty watery exudation covering the brain ; the convolutions of the brain adhere to each other by means of thickened exudation ; gray substance appears soft and anæmic ; white substance apparently diminished, hard, and atrophic ; both ventricles filled with fluid, distending them somewhat ; œdema of the whole brain-substance.

In these two cases we have symptoms similar to those of the first class, but they were brought about as the result of acute pathological changes after both children had lived through a period of health. We learn from the post-mortem of the last case that meningitis, with considerable thickening of the brain-coating and an abundant exudation above and below the pia, was the result of the brain fever. The moderate hydrocephalus was present since birth, and had, no doubt, aggravated the pressure and its consequences, for in this case the general atrophy was more marked than in the first, in which meningitis alone was present. Both cases are striking illustrations of the fact that even a mild form of convex-meningitis (either epidemic or simple) can leave changes, by means of exudation, adhesions, and thickening of the meninges, which by their persistent pressure may cause atrophy of the brain-substance, and particularly in cases of congenital hydrocephalus, and where the fontanelles and sutures of the infantile cranium are prematurely closed, as A. Jacobi pointed out in his above-mentioned essay.

### III.

There is one peculiarity about all of the cases so far cited well worth calling attention to, and that is that the symptoms of defective innervation always remained the same in intensity, —in the first class from birth till death, and in the others from the time of their partial recovery from acute meningitis. In conclusion, I am enabled to report of a third class of brain-atrophy, in which this peculiarity was not maintained, but where the symptoms from beginning to end became more and more aggravated.



CASE I.—A male, five months of age. Parents young and healthy. No hereditary taint whatsoever. Up to the end of the third month of his life this boy was well and hearty, had a good appetite, and appeared to be gaining in every respect, well nourished by mother's milk. At the end of that period the child gradually grew restless and cross, cried without particular cause, would "stiffen his back and legs up" (as the mother termed it), and soon kept on screaming for hours, so as to produce complete hoarseness. While screaming the face wore painful expressions, the head was thrown back, the mouth opened wide, and the arms were drawn tightly to the chest, while the lower extremities were stiffly extended so as to come in a line with the back. Gradually considerable difficulty was experienced in nursing, as contractions of the muscles would prevent sucking until repeated efforts had been made and the apparent excitement of the child been allayed. In the mean time the baby became apathetic and wore a staring, ill-humored facial expression, while the head (which had formerly been well balanced) became more and more unsteady on its pivot.

General convulsions and elevation of temperature were never noticed, yet the child grew thinner and withered more and more.

*Status præsens.*—Lean, withered child; skin flabby; no rachitis; skull of normal size, fontanelle open; dull facial expression; pupils normal; head is poorly balanced; arms and fingers flexed; hands open occasionally; muscles of trunk and extremities weak and flabby; child cannot sit up; on touching the spinous processes and their immediate neighborhood contractions as above described set in and child begins to cry from pain; occasionally the opisthotonus is quite marked.

Before trying to diagnosticate I will here insert that a sister of this little patient, who died in July, 1885, at the age of eleven months, presented the very same symptoms. This first child of its mother also reached the fourth month of its life in a healthy condition, it also began with incessant crying and moaning, and also developed the contractions of muscles, which later on became permanent, so as to keep the body in pronounced opisthotonus. Fever was also absent in this case, yet

the body was reduced gradually to a mere skin-covered skeleton. The mental faculties decreased more and more, the corneæ of both eyes ulcerated, and the scene closed slowly and gradually by heart-paralysis after an illness lasting six months. Thirty-six hours before death I counted forty heart-beats in a minute, and my thermometer registered 96° Fahrenheit *in ano*. To finish the story of the boy is but to repeat the one just now told, with the exception that the fatal illness only lasted four months, and that forty-eight hours previous to death this child's temperature registered but 94° F.

That the pathological changes in these cases were located in the brain and from the outset, and not from the spinal cord (as might be supposed), is shown by the gradual receding of the intellect, together with the increasing intensity of the other symptoms and the general wasting away of tissue. The trouble must have been bilateral, evenly distributed upon both lobes, as monoplegic or hemiplegic symptoms were never present, thus excluding hemorrhage, solitary tubercles, tumors, and disease of the blood-vessels due to hereditary syphilis, which latter affection in brain-trouble of children is not at all so rare, as I was able to demonstrate in a paper on that subject (*Jahrbuch für Kinderheilkunde*, Bd. 22, 1885). As the symptoms only began after months of apparent normal condition, as the fontanelles were open and hydrocephalus absent, we were brought to assume an acquired, slowly increasing affection, for if the pressure doubtless exercised upon the cerebral convexity had been present in the same intensity in the beginning as towards the end of the case, the symptoms, if at all changed, would have gradually become milder, instead of the contrary, because the cranial cavity steadily grows larger, and the pressing mass would either remain the same or diminish by partial absorption. So the only outlet for us was to diagnose a chronic meningitis, steadily increasing and running its course without febrile disturbance, and depositing an abundant exudation upon the upper brain-surface.

And, indeed, our diagnosis is confirmed by the post-mortem of the girl. The *pia* was found extensively thickened, particularly along the course of the blood-vessels. An enormous, serous exudation (about one-eighth of an inch in diameter) be-

low the pia was pressing upon the brain, flattening the convolutions and partly closing, partly widening, the intermediate fissures. This exudation was clear and transparent, of watery color, and of jelly-like consistency. Only along the course of the blood-vessels a more massive emigration of white blood-corpuscles had taken place, and had left milky discoloration. No tubercles and no tubercle-bacilli were found. The bones of the skull, the dura, and the base of the brain were found normal. Very little fluid in the ventricles.

In these three classes of cerebral paralysis we have clinical pictures very much alike, and all, in fact, are due to atrophy of the brain-substance, only brought on by different causes. In the first class insufficient blood-supply caused a general atrophy of the whole brain. Acute meningitis leaves a permanent atrophy of the convexity, while the chronic progressive inflammation of the pia steadily increases its pressure upon the brain-cortex, gradually not alone crippling the nerve-centres but ultimately destroying them altogether.

Aside from the infrequency of cases of this kind, I feel justified in relating them, as also adding to our practical knowledge, and as a means for exercising our diagnostic faculties, for we can better learn to diagnose from obscure than from every-day cases; and as medicine is an art and not a trade, it behooves us to try and make a correct diagnosis before, not after, the death of the patient.

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## Current Literature.

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### I.—HYGIENE AND THERAPEUTICS.

Nebel: The Prophylaxis of Ophthalmo-Blennorrhœa Neonatorum. (*Ztsch. f. Geb. u. Gyn.*, Bd. xiv. H. 1.)

The question concerning the prophylaxis of ophthalmo-blennorrhœa neonatorum, which was supposed to have been settled, has stood forth in a new aspect since Kaltenbach presented to the Gynæcological Congress at Munich the results of his methods of treatment during the past few years. He considers that the



danger to the infant of primary infection is not great, or, at least, not so great as has been generally supposed, and this statement is sustained by the records of maternities in which this condition obtained, and in which it appeared that the disease was conveyed from patient to patient, from eye to eye, after birth.

Kaltenbach also believes that the danger of primary infection to the eye may be prevented in a far more simple and certain way than by the use of nitrate of silver, and that is by thorough disinfection of the mother's genital tract with sublimate solution, and washing the child's eyes with distilled water immediately after birth. This method obviates any possible irritation of the child's eyes and enforces the principle of prophylactic treatment with reference to the nurse or midwife. Kaltenbach's views met with decided opposition at the time they were uttered. He had tried Crede's method, however, in the hospital at Giessen and found that in a small percentage of cases the results were not satisfactory. With the method which he proposed there was one case of very mild conjunctivitis in a series of two hundred confinements, and in subsequent series of one hundred and thirty, all that had occurred at the time he presented his paper, there were only two cases of mild conjunctivitis. In one of the latter it was thought that the patient had not received the full benefit of Kaltenbach's method, neither he nor his regular assistant being present when the child was born, and in the other the second stage of labor was so far advanced when she was received into the hospital that the vagina could not be properly disinfected. In none of the three hundred and thirty children was there a single case of blennorrhœa. At the Berlin Maternity the results have not been so satisfactory, as Cohn reports four per cent. of blennorrhœa and a still larger percentage of mild conjunctivitis. The author explains this as due, probably, to a less degree of care in carrying out the details of the method.

[A detailed account is given of all the steps which are required by this method before, during, and after labor. We do not think the author has succeeded in establishing the superiority of Kaltenbach's method over Crede's. The latter is simplicity itself, and has certainly revolutionized the condition which obtained in many maternities with respect to the state of the eyes of new-born infants.]

A. F. C.

Laure: The Use of Santonine. (*Jour. de Méd.*, August 21, 1887.)

The dangers which may attend the use of santonine, even in moderate doses, were seen in the case of a child three and

a half years of age, who was plunged into a state of partial coma, interrupted from time to time by crying and vomiting, after having taken ten centigrammes of santonine on the previous morning. The belly was very sensitive, the rectal temperature remained under  $37^{\circ}$  C., and there was complete anuria. Milk, tea with rum, and baths were prescribed, but there was no improvement on that day nor the next. The following day, after a bath had been given, the flow of urine was re-established, and from that time the child progressed to complete recovery.

According to Kilner white santonine is more toxic than yellow, the latter having been exposed to the rays of the sun, but without losing any of its therapeutic properties. In regard to dosage it is not advisable to exceed five centigrammes for a child under two years of age. In all cases the administration of santonine should be associated with that of a purgative, calomel, for example, in order to facilitate elimination. Its toxic action depends upon the readiness with which it is eliminated, slow elimination resulting in phenomena such as were presented in the case which is here reported. Lewin and Caspari recommend that santonine be administered with oil, which would insure the longest possible contact with the intestinal worms which are to be destroyed and absorption by the intestine. Nervous nor visual troubles have ever been observed when it has been thus administered. Becker and Binz consider that ether and chloral are its most efficient antidotes. If there are no nervous lesions in a given case, the author prefers to give it so that it may be eliminated by the kidneys, and tonics may be indicated while the patient is under its influence.

A. F. C.

Strumpf: The Use of Sublimate in the Treatment of Diphtheria. (*Gaz. Med. di Roma* [abstracted], October 1, 1887.)

In a recent epidemic of this disease, in which all the ordinary means of treatment were unavailing in the author's hands, it occurred to him to make use of insufflations of the powdered sublimate every three hours, using for the purpose the insufflator of Richardson. The first cases which were treated in this way recovered in a few days. Encouraged by this success, the author then used it in a series of thirty-one cases, of which only two terminated fatally. In nine of the cases there was scarlatinal diphtheria, in five pharyngeal diphtheria with grave laryngeal symptoms, in twenty others there was simple pharyngeal diphtheria. In one case the patient had been treated with chlorate of potash, and had begun to have

paroxysms of suffocation when the use of sublimate was begun. A solution of fifty centigrammes to the litre of water being used by atomization, the result was the desired one. Another child, eighteen months old, had been treated without success with boric acid. Inhalations of sublimate were then used, resulting in salivation and subsequent cure of the patient. This means of treatment is approved not only for its local effect, but also on account of its antipyretic action, which was quite satisfactory. It must not be expected that local changes will take place immediately; from three to five days of treatment will be necessary before the membranes disappear. The dosage will vary, of course, with the age of the patient; for a child under six years of age, the strength of the sublimate solution or mixture should be 1 to 200; for older children, 1 to 100. For children two years of age or less, the strength should not exceed 1 to 50. The atomization for the first five times should be made every two hours, and afterwards at longer intervals. The treatment should not be suspended unless salivation occurs.

A. F. C.

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II.—MEDICINE.

Stickler: Foot-and-Mouth Disease as it affects Man and Animals, and its Relation to Human Scarlatina as a Prophylactic.

Also, Remarks upon the Transmission of Human Scarlatina to the Lower Animals and the Use of Virus thus cultivated as a Preventive Agent. (*Med. Rec.*, December 10, 1887.)

The author describes the foot-and-mouth disease as it affects man, and also gives a description of the disease as it is manifested in cattle. The statistics of the "sore throat epidemic" in Dover in 1884, in which the disease was traced to the use of milk from cows affected with the foot-and-mouth disease, show that of one hundred and eighty-three persons who were interviewed out of the two hundred and five who had been affected with the "sore throat"—

1st. That none of the persons affected with the "throat epidemic" have since had scarlet fever,—*i.e.*, two years later. 2d. That members of families who had previously had scarlet fever escaped the "throat epidemic," while the remaining portion of the households developed the disease. 3d. That sixteen persons affected with the "throat epidemic" had had scarlet fever. 4th. That four of the sixteen persons who had had



scarlet fever had a mild form of the "throat epidemic." 5th. That of the affected individuals two had had scarlet fever when young. 6th. That ten of the cases were doubtful whether they had previously had scarlet fever. May it not, he says, therefore, be possible: 1st. That the affected persons have not since had scarlet fever because of the protective influence produced by the "throat epidemic." 2d. That the members of certain households who had had scarlet fever had thereby secured immunity from the "throat epidemic," as indicated by the fact that they escaped. 3d. That in four of the instances in which scarlet fever had antedated the "throat epidemic" there was a partial protection afforded, as indicated by the fact that four of these cases were mild. 5th. That these two diseases may be for a time mutually protective.

Believing that in the evidence furnished by the "Dover epidemic" there was an indication of what might possibly be accomplished by the use of the virus of foot-and-mouth disease as a preventive of human scarlatina, he made further experimental investigation. With some virus (contents of vesicles) taken from cows having a mild form of foot-and-mouth disease he inoculated three children who had never had scarlatina, and subsequently exposed them to scarlet fever contagium. A short time after the inoculation of the first child the cervical lymphatic glands became enlarged and tender to the touch. There was no marked systemic disturbance, neither was there any sore mouth nor throat. All signs of glandular trouble had disappeared in six days. In the second case seven days after inoculation the temperature rose to 103° F. There was sore mouth, without showing any vesicles, and a pricking sensation in her throat. She had slight headache and impaired appetite. The third subject developed no systemic disturbance or local lesion after inoculation. The first two cases were exposed by having the pillow which the scarlatinal patient in the stage of desquamation was using placed over the face and held there some time. One was in addition made to inhale the breath of the patient, and both remained some time in the sick-room. None of the three contracted the disease.

The doctor has been endeavoring to determine: 1st. Whether scarlatina can be generated in the lower animals by inoculation with human scarlatinal virus. 2d. If so, whether such a disease is mild in character. 3d. Whether virus furnished in such a manner could, by inoculation, be used as a means of preventing the development of scarlet fever in human beings. He inoculated two colts with blood and pharyngeal mucus from well-marked cases of scarlatina. In both animals there followed the inoculations sore throat, redness of mucous mem-

branes of nostrils, mouth, and pharynx, elevation of temperature, and in one desquamation of the cuticle. Inoculation of rabbits, dogs, guinea-pigs, and cattle with human scarlatinal virus gave gratifying results, especially in cattle.

He has inoculated several children with scarlatinal virus modified by transmission to the cow, producing in one subject an elevation of temperature, eruption, and partial desquamation; in another an erythematous blush of a few days' duration, without systemic disturbance, and in two others a distinct local lesion. None of these children have since contracted the disease, although they have been more or less exposed to its influence.

Yale, J. Y.: Diabetes Mellitus in an Infant. (*Med. News*, December 10, 1887.)

Female, æt. twenty-one months. Had constant thirst during daytime and passed large amount of urine, which, the mother said, was "sticky" and had sweet odor. During night thirst not so urgent. Slept well; appetite and digestion good; bowels regular; abdomen prominent; was losing flesh and strength rapidly. Sometimes was bright and playful, but generally inclined to lie in cradle greater part of day. Urine pale straw color: sp. gr. 1038. Heat and nitric acid produced a slight flocculent deposit. Trommer's test showed large percentage of sugar. Patient grew worse rapidly and died comatose. Duration of disease not quite two months. Some months before disease set in child had several hard falls on back of head, from which she suffered severely.

Suckling: Congenital Malformation of the Heart; Ulcerative Endocarditis. (*Lancet*, November 12, 1887.)

On admission, seven weeks before death, the patient, a girl of sixteen, was very anæmic, and had a remittent type of fever varying from one hundred and two to one hundred and four degrees, the remission being attended by profuse sweating. A loud systolic bruit was present over the pulmonary area, and the spleen was somewhat enlarged.

The autopsy showed stenosis of the pulmonary orifice and an incomplete ventricular septum. The left ventricle was dilated, and extensive ulceration was present at its apex, the walls being very thin here. The right ventricle was hypertrophied. Infarctions were found in the kidneys; the spleen was large and soft.

The bruit during life was clearly not due to the ulceration.

It is not stated whether or not the patient had ever been cyanotic.

Day: Persistent High Temperature dependent upon Suppuration within the Tymporium (?). (*Lancet*, December 10, 1887.)

This is in many respects an unusual case. A boy of nine, three weeks after some head injury, was admitted to the hospital, and for six weeks thereafter had a temperature ranging from 101° to 105° F., but with very few other symptoms except a moderate drowsiness. Repeated examinations of thoracic and abdominal viscera were made with no result. The temperature was pretty uniformly high; drugs had but little effect upon it. After a sudden and quite free discharge of pus from the right ear the temperature fell to normal, rising only a few times after that. This was inferred to be the cause of the fever. The other hypothesis advanced is that of a "disturbance of nervous centres" from the injury to the head.

Eve: An Experimental Inquiry into the Relation of Strumous Glandular Disease to Tuberculosis. (*Lancet*, November 5, 1887.)

Inoculations had been performed on rabbits and guinea-pigs from ten cases of strumous glands taken at random. All the guinea-pigs became affected with visceral tuberculosis, and in four cases the rabbits. In one rabbit operated on subcutaneously, a chronic abscess containing tubercle-bacilli resulted. In another case the animal escaped altogether, but the gland from which the material was taken was undergoing fibrous change, and no bacilli could be found in it.

The experiments showed no differences between the results of inoculation from these glands and that with true tubercle.

J. Hutchinson, Jr.: The Teeth in Inherited Syphilis. (*Brit. Med. Jour.*, November 12, 1887.)

This whole subject is very carefully gone over in a paper before the Harveian Society. It was pointed out to be a fallacy to look for characteristic signs in the temporary teeth. They are, however, liable to premature decay and falling out. Of the permanent teeth those first ossified—viz., the incisors and the first molars—were the ones which showed to the greatest degree syphilitic deformity, the upper central incisors being of all the "test teeth."

Many syphilitic children have teeth normally formed.

Shield: Acute Glossitis complicated by Trismus. (*Lancet*, November 12, 1887.)

A child six years old was admitted to hospital with the tongue immensely swollen and protruding from the mouth.



The jaws had closed upon it and the teeth caused deep ulcerations. It seemed about to slough. Under chloroform the jaws were separated and the tongue freely incised; this caused a rapid diminution in the size, but it remained hanging out of the mouth in a semi-paralyzed condition for two weeks. Trismus developed, necessitating the continuous use of the gag. Ultimately recovery took place.

**Fleiner: Stenosis of the Trachea after Tracheotomy for Croup and Diphtheria.** (*Arch. f. Kinderh.* [abstracted], Bd. ix. H. 1.)

The accurate statistics of this condition cannot be given, for the reason that the ultimate results of tracheotomy in cases which are not fatal are comparatively seldom published. The author has been able to collect only fifty-six cases in which stenosis after tracheotomy has been reported. Instructive cases are narrated to show the harmful influence of ill-fitting canulæ, and of the prolonged use of even well-fitting canulæ. He considers that the causes of stenosis are:

1. Granulations by the diphtheritic process itself, by tracheotomy, by injuries to the mucous membrane, and by the fixation of improper instruments.

2. Swelling, breaking down, and folding of the mucous membrane, caused by chronic catarrhal and inflammatory conditions of the mucous membrane.

3. Pathological softening of the cartilages, or destruction of the normal resisting power by too extensive cutting.

4. Improper position of the ends of the divided cartilages by the introduction of canulæ which are too large for the opening.

Another cause is found in the failure to remove the canula sufficiently soon, and this is thought to be very common and associated with granulation stenosis and paralysis of the larynx. The granulation stenoses are due to conditions of atmospheric pressure. As tumors they vary in size, and are sometimes so small that their significance is not apt to be sufficiently appreciated. They usually occur at the site of the tracheotomy, and sometimes at the lower border of the instrument upon the anterior or posterior tracheal wall. They may be isolated or in groups of two to five, and may be sufficient cause for obstruction of the tube, or for the production of reflex spasm of the glottis. They may be caught between the vocal bands, in which case death would occur suddenly. A stenosis is not generally discovered until an attempt is made to remove the canula. The symptoms pertaining to this condition have been described by Trousseau and by Gerhardt. In other

cases the symptoms of laryngeal stenosis may not be manifest until weeks or months after the canula has been removed, and they may be brought to light by the unusual violence of a catarrhal condition of the laryngeal mucous membrane. The location of the stenosis can sometimes be made out by the presence of a murmur or râle at the narrow part. If the stenosis is in the larynx there is disordered phonation. If in the trachea the voice may be normal, though the respiratory disturbance may be great. In tracheal stenosis the larynx does not move up and down, while in laryngeal stenosis it does. The treatment of these stenoses will depend upon their location and their condition. Trousseau's advice to let them alone is believed to be harmful. They may be treated with forceps, snares, sharp spoons, and the potential or actual cautery. If granulations coexist with stenosis, dilatation must be performed by means of bougies passed from the mouth downward, or from the canula downward. The stenosis is below the canula. Various other dilating instruments have been devised for this purpose, including those of Pauly, Dupius, Passavant, Trendelenburg, Schrötter, and Kappeler. If the granulations extend very low down, a deep tracheotomy (secondary) may be efficient. Czerny has reported a very interesting case of this character, in which the granulations seemed to wither up after they were exposed. A. F. C.

**The London Scarlet Fever Epidemic.** (*Lancet*, November 26, 1887.)

It is editorially stated that, during the months of August, September, and October, three thousand cases have been admitted to the various institutions of the city. The death-rate thus far has been seven per cent., which could probably be reduced if the cases were earlier removed from their homes.

Of eighty-three deaths occurring in two hospitals, twenty-four were within two days of admission. These were mostly hopeless cases, with sloughy throats, swollen glands, discharging nostrils, and much asthma, and were only carried along for forty-eight hours by free stimulation.

Some form of kidney-disease is responsible for twelve per cent. of the deaths; this number would be increased if many of the "malignant" cases were included.

*Albuminuria* in an appreciable quantity and for a considerable time occurred in from fifteen to twenty per cent. of the cases. A very considerable number of these cases were admitted while desquamating.

*Convulsions*, as a complication of the nephritis, have been neither common nor serious.

*Pulmonary affections* have occurred either with nephritis or alone in sixteen of one hundred and thirteen fatal cases, pneumonia being the more common form and pleurisy rare. No case of empyema has been noted.

*Laryngitis* has been the cause of death in eight per cent. of the cases, and in two of these membrane was noted.

*Joint-affections* in young patients have been more serious than those among adults, but less frequent.

*Throat-complications* have been rather unusually frequent. Sloughing of the tonsils and cellulitis of the neck with sloughing were present in about twelve per cent. of the fatal cases.

Isolation ought to be insisted upon until complete desquamation has taken place, the average period being not less than eight weeks.

Baginsky: Acetonuria in Children. (*Arch. f. Kinderh.*, Bd. ix. H. 1.)

The investigations of the author upon this subject are summarized as follows:

1. Acetone exists in the urine of healthy children under conditions which are perfectly normal, but in very small quantities.

2. It is found in abundance in the urine of children who are undergoing febrile processes, for example, pneumonia or measles.

3. The quantity increases as the fever develops and diminishes as the latter declines.

4. The formation of acetone is probably due to the destruction of nitrogenous material in the organism, for acetonuria becomes more marked in dogs when they are fed with a diet rich in nitrogenous matter, and it may then be made to disappear by feeding them for some time upon carbo-hydrates.

5. The quantity of acetone in the urine is enormously increased during attacks of epileptiform spasms in children. It was not believed that this increase was due to treatment with chloral hydrate in certain cases which came under the author's observation.

6. Under the influence of a deficiency of acid in the system, if there is no fever, and the diet is non-nitrogenous, there will be no acetonuria. Interference with respiration in the course of a spasm cannot be regarded, therefore, as a cause of acetonuria.

7. This acetonuria does not arise from processes of fermentation in the digestive canal, or, at least, the quantities of acetone which are developed in connection with lactic acid fermentation are very small.



8. Neither in the feces nor in the contents of the stomach in dyspeptic children has the author been able to find acetone, with a single exception.

9. The presence of acetone cannot be considered the cause of eclamptic attacks in children, for in those forms of disease which usually precede convulsions acetone is either not present in the urine, or is present only in very small quantities.

10. The conjecture that acetonuria bears a certain relation to rachitis has not been confirmed by clinical and experimental investigations. A dog which was fed for a long time with acetone did not develop rachitis.

11. Long-continued administration of acetone to animals also failed to develop nephritis, though Albertoni and Pisenti have asserted that such a result would follow. A. F. C.

Böing-Merdingen: Direct Transmission of Diphtheria from Animals to Human Beings. (*Arch. f. Kinderh.* [abstracted], Bd. ix. H. 1.)

A girl, ten years of age, was suddenly taken ill with vomiting, fever, difficulty in swallowing, with diphtheritic patches upon the tonsils, hard palate, and uvula, with swelling of the lymphatic glands, and foul breath. Sporadic cases of scarlatina had occurred in the neighborhood during the preceding six weeks, and it was supposed that the child might have been infected with that disease, but that did not prove to be the case. On the third day of the disease the author noticed that one of the chickens in the yard attached to the child's dwelling moved around in a peculiar manner. Examination showed that one of its eyes was much swollen. The conjunctiva was infiltrated and of a dirty gray color, and secreted a thin viscid fluid. The mucous membrane of the fauces was dark red and swollen, but showed no exudate. The owner of the chicken admitted that twenty-six of the fifty chickens which he possessed were similarly diseased. The diagnosis of diphtheria in these animals was made, and this was confirmed by a careful examination of a specimen which was sent to Bonn to Professor Ribbert. It also appeared that the child in question had been in the habit of feeding these chickens, and, when they could no longer eat in the ordinary way, had frequently filled their mouths from her own, in which she placed morsels of bread, the chicken's beak being introduced into her mouth for the purpose. This explained the fact that this same child had previously had two attacks of mild angina and conjunctivitis palpebrarum, an interval of eight days being between the attacks. Three other children in the same house, who had not fed the chickens, remained entirely free from the disease. A. F. C.

Saint Germain: Affections of the Mouth in Children. (*Gaz. Med. di Roma* [abstracted], October 1, 1887.)

Among the tumors which implicate the buccal cavity epulis is not infrequent among children. These tumors participate in the nature of papillomata and of sarcomata, and are apt to recur frequently. They may appear in the angle between two teeth in the form of a small projecting red mass, and should be completely extirpated. If the base of the growth is touched with the thermo-cautery, recurrence may often be avoided. It was formerly believed that all children were born with an abnormal frænulum linguæ, and the custom was to cut it. In cases in which the abnormality actually exists, it appears as a pellucid membrane without any vessels, and its section is usually a simple matter. In some cases, however, it may be short, thick, and vascular, and its division might give rise to severe hemorrhage. If the operation is deemed advisable in such cases, it must be done with all necessary precautions.

If teeth have protruded at the time of birth they are usually a cause of anxiety to the parents of the child, and they may require their extraction. Such an operation is a dangerous one, and the author has seen a case in which two teeth were drawn from a new-born infant, the result being a fatal one in twenty-one days from uncontrollable hemorrhage. The introduction of soft wax into the alveoli in such cases would control the bleeding.

Ranula is not common in children, especially the hemorrhagic variety. The same is true of tumors composed of erectile tissue. Ranula rarely becomes extensive, and may remain in a stationary condition for a long time. The best method of treatment consists in excision of the cyst with scissors and cauterization of its bed with nitrate of silver.

Wounds of the tongue are not infrequent in children, and may be of great significance. The tongue may be perforated by the teeth, in which case some writers recommend the passage of a sufficient number of sutures. This is an operation which is difficult, painful, and to be avoided. Such wounds almost always heal spontaneously, and without any inconvenience, either in respect to mastication or speech. The best plan of treatment is simply to give the organ as much rest as possible for a few days following the receipt of the injuries. The same is true of injuries of the palatal arch. The uvula is sometimes of unusual length and volume. Some writers have stated that certain forms of chronic cough are due to the constant contact of the uvula with the base of the tongue. There are cases in which excision will be necessary,

and the operation is not always as simple as it would seem, on account of the density of the tissue. Considerable care must be taken to avoid leaving the organ in a ragged and mutilated condition.

A. F. C.

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### III.—SURGERY.

Gerster: On Strangulated Hernia in Children. (*N. Y. Med. Jour.*, January 21, 1888.)

Strangulated hernia in children is a very rare condition. After sufficient time has been spent in attempts at reduction to prove that they are useless, the operation for strangulated hernia must be undertaken. It is extremely difficult to prevent infection by feces or urine, or both, and subsequent inflammation of the wound in small children. Most cases that occur in children take place in a congenital hernia. Usually the neck of the sac is not very wide. In all of the cases which have come under his observation, in which the external wound was closed by suture, primary union did not take place. The wound became soiled, the margins fell apart, the stitches had to be removed, and the wound afterwards healed by granulation. In view of these facts, he believes it is better, after occlusion of the sac and inguinal canal, not to unite the edges of the external wound, but to pack it with iodoform gauze, and treat it as an open wound. In this manner we can assure antisepsis of the wound. Packing the wound with iodoform gauze will form a secure bulwark against inflammation.

Prettyman: Gonorrhœa in Young Children. (*Med. Rec.*, November 12, 1887.)

Two brothers, aged nine and eleven years respectively, were found to be suffering from acute urethritis. They both admitted having had sexual intercourse with a seventeen-year-old colored girl.

Power: Congenital Hernia into the Umbilical Cord. (*Brit. Med. Journal*, October 22, 1887.)

The child was born at term of a healthy mother. At birth a transparent sac containing several coils of intestine were situated in the umbilical cord near the body.

The cord was tied and an ineffectual attempt made to reduce the gut through the umbilical opening. A director was then inserted and the ring was enlarged. About a foot of small intestine was then with some difficulty reduced.



The wound was sutured with wire and treated antiseptically, but the child died three days later of peritonitis.

There was no other malformation present. Mr. R. J. Godlee had seen two cases of hernia into the base of the umbilical cord. In one strangulation occurred, and the contents on opening were found to be the cæcum and vermiform appendix.

Mr. Frederick Treves had seen five cases, and had collected about twenty of this form of hernia. The hernia in the majority was surrounded by the coverings of the cord, and enclosed in a thick sac. Sometimes there was no sac.

It was due to a tardy return of the cæcum to the abdominal cavity and the imperfect closure of the visceral plates. The gut involved was usually the cæcum or Meekel's diverticulum. If another part of the intestine was involved, it was usually the ileum in its lower portion. In nearly every case where the gut was not readily reducible, it was better to operate and excise the sac.

It was not usually associated with any other deformity, according to his statistics.

Arthur Neve: Bone-Disease after Smallpox in Young Children. (*Lancet*, September 24, 1887.)

In Kashmir, where the writer's observations were made, such sequelæ are stated to be remarkably common.

From statistics he estimates that seventy-five per cent. of the population die in childhood from smallpox at that place.

The form of inflammation affecting bones and joints is generally the acute. The following cases are reported:

I. Disease of both elbows and one wrist in a boy three years old; simultaneous excision; cure.

II. Complete necrosis of the ulna in a child of eighteen months; resection; cure.

III. Necrosis of the scapula; resection; recovery; age six months.

IV. Acute inflammation of the shoulder-joint; incision and drainage; recovery; patient six years old.

Hott: Remarkable Deformity in a Case of Triplets. (*Brit. Med. Jour.*, October 22, 1887.)

First delivered was a double fœtus; above the umbilicus these were normal. The junction between them was three inches vertically and two inches broad, the two iliac bones being united and the spines fused.

A small spina-bifida tumor existed at the junction of the spines. In front, below the union of the two sides of the pelvis, was an elevated cutaneous fold. Below this were two

nymphæ, terminating in two rounded cutaneous folds, the labia majora. On closer examination a smaller set of nymphæ more internal were seen, and between these the orifices of a double vagina. One was one and a quarter inches deep, the other a little less.

There was no clitoris. A shallow groove led from below the double vagina to a small anal orifice. A complete septum appeared to exist between the two vaginal canals, and another between them and the rectum.

The inferior extremities were four in number and normal.

This double fœtus weighed six pounds and eleven ounces; it survived four days.

The third fœtus weighed four pounds and did well.

The placenta was large and single. One large cord sprang from its centre, and about two inches from it divided into two, one passing to each umbilicus of the double fœtus; a second cord sprang from the margin and supplied the single child.

The parents were first cousins.

Treves: Congenital Tumor of the Neck. (*Lancet*, November 5, 1887.)

A specimen was shown to the London Pathological Society which had been removed from the neck of a girl three years old. It had existed since birth, and was found when removed to be a curiously-shaped mass of cartilage. It was situated over the sternal end of the sterno-mastoid muscle. The mass was in the line of the fourth branchial cleft, akin to the more common sinus or fistula. No skin-tag or fistula was present in this case. A fibrous cord extended deeply inward from the tumor.

Simon: Foreign Body in the Right Bronchus. Tracheotomy; Recovery. (*Brit. Med. Jour.*, November 26, 1887.)

A boy of six years was admitted about thirty hours after "swallowing" a damson stone. A choking fit had occurred at the time of the accident, and later the dyspnœa came on again and was more urgent. The voice was stridulous and respiration noisy. There was found complete absence of breathing sounds over the right base and dulness. Tracheotomy was done twenty-four hours after admission for urgent dyspnœa. Nothing could be seen in the trachea, and an oiled feather was introduced, which induced a violent expiratory effort and the expulsion of the stone. Immediate improvement followed, and the signs of pulmonary œdema, which were quite marked, quickly cleared up. The patient was discharged cured at the end of a fortnight.

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THERAPEUTICS OF INFANCY AND CHILD-  
HOOD.

BY A. JACOBI, M.D.,

President of the New York Academy of Medicine, Clinical Professor of the Diseases of Children in the College of Physicians and Surgeons, New York, etc.

(Continued from March Number.)

II.—TREATMENT OF THE NEWLY-BORN. (*Concluded.*)

8. *Treatment of the Cord.*

THE indications for the application of the ligature, and thereby the complete interruption of foetal circulation, appear to vary in the practice and teachings of the obstetricians. When the baby has cried a few times, the majority apply the ligature and cut the cord. Others insist upon waiting for the collapse of the cord produced by that of the vein, while the arteries are still pulsating, and some will wait for the disappearance of the arterial pulse. A few facts may be remembered for the purpose of guiding the practitioner in individual cases, for the amount of blood entering, or retained in, the body of the infant is by no means an indifferent matter.

If the ligature be applied after the cessation of the umbilical pulsation, there are still six ounces of blood (one hundred and ninety-two grammes, according to Zweifel) in the placenta. If the latter be compressed by Crede's procedure that amount is reduced to three ounces (ninety-two grammes). Thus the



difference between the two procedures means a difference of three ounces of blood in the circulation of the newly-born, which is an enormous addition to the usual quantity of blood, which in the infant but little older is but little more than five per cent. of the total weight of its body. After all, it appears that the deferred separation of the baby, when poorly developed and pale, and the admission of more blood to its system, is deserving of recommendation; while, on the other hand, there may be an occasional indication for bleeding the infant.\*

The introduction of a large quantity of blood is, however, no unmitigated blessing. The blood-vessels of the newly-born are so thin and fragile that spontaneous hemorrhages on serous membranes and into the nerve-centres, etc., are by no means uncommon under normal circumstances. It is true that the destruction of superfluous blood-corpuscles is very rapid, as rapid, indeed, as it is known to be after transfusion in the adult, but some time is required to accomplish that end, and during that time hemorrhages may take place, and have been reported by Neumann and Illing. This danger is sufficiently great to counterbalance the alleged observation of Hofmeier, according to whom babies, after deferred separation from the mother, lost less weight and commenced to increase sooner than those removed more speedily. However, Violet states that the former lost twenty ounces (six hundred and nineteen grammes), the latter but nineteen (five hundred and eighty-five grammes).

Nor does Porak's observation, according to which congested babies exhibit a more intense degree of jaundice, lack confirmation.

If the ligature be thin, it is liable to cut through the walls of the blood-vessels prematurely; if too thick, it may not suffice to compress them satisfactorily. It ought to be applied at a distance of from one and a half to two and a half inches from the abdominal wall. Not nearer, in order to avoid the effect of the immense muscular power of the umbilical arteries inside the abdominal cavity. A second ligature is placed about an inch from the first, and the cord cut between them. It is a

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\* ARCHIVES OF PEDIATRICS, March, p. 130.

good rule, which must surely be adhered to in every case of thick cord, to apply an additional ligature between the first and the abdominal wall, to avoid hemorrhage from the insufficiently compressed arteries, which may take place after the cord has commenced to shrink. The abdominal end of cord is then wrapped up in a dry and soft piece of linen, lint, or cotton, placed on the left side of the abdomen, and fastened, by means of a soft flannel bandage, which is wide enough to cover the larger part of the chest and all of the abdomen, so as not to slip.

In wrapping up the end of the cord no oil must be used. Warmth and dryness favor mumification; moisture and exclusion of air, gangrene. This holds good also for the cord when it is separated from the living baby by an additional ligature, and in the dead. Thus, the former forensic axiom, that a dry cord proved life, which prevailed for decades after Meckel had demonstrated its fallacy as early as 1853, is absolutely worthless. Thus, fatty substances, and moisture of any kind, must be avoided as much as possible. Powdered subnitrate of bismuth, or oxide of zinc, or iodoform, or salicylic acid, one part with ten parts of starch, may be dusted round the insertion of the cord and over the stump daily. The latter application is not necessarily useless (from the point of view of antisepsis), for the separation of the cord is a gradual one, and not uniform through the whole thickness of the amnion and the three blood-vessels.

The size of the sore stump and the rapidity or slowness of cicatrization depend upon the thickness of the cord, the intensity of the line of demarcation, and the reactive inflammation. The latter are most marked in vigorous infants. As a rule, the surface is dry a few days after the falling of the cord, and cicatrization complete within twelve or fifteen days after birth. This normal process is, however, disturbed by careless handling, local irritation, and infectious influences. In these cases there is a serous or purulent secretion, and cicatrization may be deferred for many weeks. Under these circumstances local treatment is required. Carbolic acid ought to be avoided, for the newly-born and infant are easily influenced by its poisonous properties. Solutions of lead, zinc, or alum answer quite well.

As before, however, I recommend the powders of zinc oxide, bismuth subnitrate, alum with starch, salicylic acid with starch, or iodoform. Such measures will always prove helpful; to omit them in times of erysipelas or diphtheria is unpardonable. Perchloride of iron, or subsulphate of iron, must not be used. Under the hard coagulation formed by its application over the whole wound secretions will accumulate, cannot escape, are absorbed, and produce sepsis. I have seen babies die from applications of iron to the umbilical stump, as I know of women dying for the same reason when the hemorrhages from their uteri or from the lacerated vaginae were maltreated in the same manner.

### 9. *Omphalitis.*

Inflammatory infiltration of the abdominal integuments which surround the stump, with swelling, pain, purplish discoloration, gangrene, or abscesses, and consecutive peritonitis, occurs within a few weeks after birth, and is the result of traumatic or septic influences. The dermatitis requires applications of lead-wash; tendency to suppuration, warm antiseptic (or aromatic) applications; the presence of pus, a large incision, with antiseptic after-treatment. Cold applications are not tolerated. Bathing is painful. Any of the antiseptics mentioned will render good service. Carbolic acid must be avoided. Generous feeding by a wet-nurse, alcoholic stimulants (from one to two teaspoonfuls of whiskey daily), plenty of water, and evacuation of the bowels by injections, are the additional aids in treatment. The main reliance is on the local treatment,—viz., large incisions and antiseptics.

### 10. *Umbilical Gangrene.*

This is the result of an inflammatory process in a prematurely-born baby, or one that fell sick with diarrhoea. It may extend inwards to the intestine and terminate in perforation. The prognosis is very bad except in the few cases in which there is a well-marked line of demarcation. The treatment consists in antiseptics and stimulation.

### 11. *Arteritis and Phlebitis.*

The former is very much more frequent than the latter. Arteritis is often connected with general sepsis, pneumonia,



pleurisy, peritonitis, arthritis, and subcutaneous abscesses. The infection reaches the arteries from outside through the lymph circulation, begins in the connective tissue surrounding the vessels, and attacks the adventitia first. Budin succeeded in forcing septic material through the cord from beyond the umbilical ligature. Pus can seldom be squeezed out of the arteries, and the diagnosis is sometimes made at the autopsy only. The disease begins often before the complete separation of the cord, absorption taking place through the cord, which dries and shrinks irregularly, and admits poison through the newly-formed cuts or fissures.

The treatment is indicated by the causes, which are self-infection from a putrefying surface, infection by soiled fingers, cloths, baths, applications of any kind, the contact with a septic mother, or the contact with anything septic,—for instance, the pus of ophthalmo-blennorrhœa, or the decomposing lochial discharges of a healthy woman. Thus the treatment is mostly preventive. The scissors, cloths, and sponges used for the newly-born must be aseptic. The baby must not be in the mother's bed, and must be attended before the mother on the days following her confinement. The hands touching the baby's body must be carefully cleaned and disinfected, the cord and umbilical wound treated as detailed before. The internal treatment is identical with that advised in omphalitis and gangrene.

The symptoms of phlebitis differ sometimes from those of arteritis in this,—that there is more peritonitis of the hepatic region from the beginning, more epigastric meteorismus, more icterus. Now and then pus can be obtained by gently squeezing along the course of the vein. The infection is either direct, through the vein, in which an ulcerous process is sometimes found half an inch or an inch above the navel, or also through the lymph-current in the surrounding connective tissue and the adventitia of the vessel. The treatment cannot differ from that of arteritis. Recovery is possible when the absorption of the poison has not been very copious, or elimination progresses with absorption at an equal rate. A female baby of less than three pounds, in my experience, exhibited no other source of septic infection but a slight erosion or ulcera-

tion of the umbilical stump, with hardly any secretion. She recovered, though the process extended to the end of the second week, with temperatures reaching sometimes 103° F.

## 12. *Umbilical Hemorrhage.*

This may take place from the arteries, either before or after the separation of the cord. Its treatment is either mostly preventive, or the indications become so clear in every individual case that it becomes easy to fulfil them. Though the pulmonary aspiration and the great contractility of the muscular layers of the arteries render a hemorrhage difficult, though no ligatures have been applied, an insufficient development of those muscular fibres, or the presence of asphyxia or atelectasis, or a pneumonia, may produce a disposition to bleed. In such cases it may become necessary to apply an additional ligature. The arterial power being greatest in the abdominal cavity and near the umbilical ring, the cord must not be cut near the body. Two ligatures, as described above, are a fair preventive. Tight bandages impede circulation, and must be avoided. When the cord is cut too short, or torn off, it may be impossible to secure the vessels; in such cases two long harelip needles must be run through the abdominal wall, crosswise, and a strong ligature tied underneath them. The same procedure may be resorted to when the hemorrhage takes place after the separation of the cord, either from the blood-vessels, or from the slowly-healing surface, in consequence mostly of inconsiderate handling. A moderate compression of the wound, which has been covered with iodoform or the salicylic acid and starch-powder, and borated cotton, by means of a bandage, will answer well.

All of such cases yield a better prognosis than those resulting from hæmophilia, congenital syphilis, general sepsis, or acute fatty degeneration. In these conditions the blood coagulates with even greater difficulty than that of the healthy new-born, and not infrequently all attempts at stopping the bleeding are liable to prove futile. The ligation of the whole mass is often unsuccessful because the stitch-channels will also bleed; chemical styptics are too often useless; plaster of Paris has sometimes proved successful, and the actual cautery has proved

advantageous in a few cases. But the majority of such cases terminate fatally.

### 13. *Icterus.*

A certain degree of yellowish discoloration of the skin is the result of the normal changes of hæmatin deposited in the skin during the rapid transition from foetal to post-natal circulation. When by retarded separation of the newly-born from the mother, and compression of the placenta, the amount of blood in the circulation of the infant is unduly increased, this form of hæmatogene jaundice is rather more developed. The simplest form of hepatogene icterus is produced by the sudden diminution of the blood circulating in the vessels of the liver, which encourages the exosmotic transition of bile into the adjoining blood-vessels. All of these forms of jaundice require no treatment. Duodenal catarrh will produce icterus in the newly-born, as it does in advanced age. Thus the feeding and the digestion of the baby must be carefully watched. The routine administration of syrup of rhubarb is a mistake on the part of the female busybodies which must be discouraged. Maybe some of them can be taught that acid cow's milk and indiscriminate feeding in general, and exposure, tight bandaging, and cold feet, can do still more harm than their medicines. Icterus resulting from congenital obliteration of the large biliary ducts, or congenital cirrhosis, or acute fatty degeneration, or epidemic hæmoglobinuria is incurable. Icterus during septic infection is a bad symptom, and rarely terminates otherwise than in death. Icterus depending on congenital syphilis of the liver is grave, but I have met with several cases which recovered. A thorough and energetic antisyphilitic treatment is in such cases the only safeguard. It may prove unsuccessful, however, because the syphilitic process of the connective tissue is not confined to the liver, but extends to the rest of the organs. Mercury must be administered for a long time, a twentieth or a twelfth of a grain of calomel three times a day; careful inunction of a scruple of blue ointment daily; or one-thirtieth of a grain of corrosive sublimate in a one-fifth of a per cent. solution of distilled water for subcutaneous injection daily. In the beginning of the treatment two of these medications may be combined,



or one of these together with the internal administration of from three to five grains of iodide of potassium. The internal administration of the bichloride of mercury is also well tolerated; one-hundredth of a grain may be given in a teaspoonful of water, or food, every two or four hours, and continued many weeks.

#### 14. *Melæna.*

The quantity of blood evacuated from the bowels is sometimes enormous, particularly in view of the fact that the weight of the blood in the body of the newly-born amounts to little more than five per cent. of the weight of the baby. The cases complicated with vomiting are the worst. These are the results of the presence of ulcerations in the stomach and duodenum. Competent respiration and an aseptic umbilical wound are the best preventives. The treatment consists in applications of ice to the epigastrium, while the limbs are kept thoroughly warm by artificial means. Tincture of chloride of iron may be given in drop doses. Food is to be given at a low temperature.

#### 15. *Trismus and Tetanus.*

Its prognosis is not quite so bad as it was believed to be formerly. Now and then recoveries have been reported, and I have seen them myself, though the number of cases observed by me have not been very numerous. The prognosis is better when trismus appears at a later period after the separation of the cord than usual, and when its course is protracted. Cases lasting more than five or six days are rather promising. Such as set in early and exhibit a high temperature ( $106^{\circ}$  and more, up to  $111^{\circ}$ ), disturbances of respiration, and great inanition are bad. As a preventive, it has been proposed to remove women, for the time of their confinement and recovery, from districts where trismus is endemic. At all events, the greatest care must be taken of the umbilical wound, through which the infection takes place. Food must be introduced through the rectum or the nose. For days after no food can be introduced into the mouth; the patients are sometimes able to swallow whatever is introduced into their

pharynx. By means of a medicine-dropper or a small tea-spoon fluids may be poured down. Medicines must be administered subcutaneously, atropiæ sulphas in doses of one one-thousandth or one six-hundredth of a grain a number of times daily ; curare, one-fiftieth or one-thirtieth ; extract of calabar, one-half of a grain. A few of my cases got well with chloral, mostly per rectum, in doses of from one to five grains from six to ten times a day. High temperatures may be influenced by antipyrin or antifebrin. Bathing is contra-indicated because the baby bears no handling.

#### 16. *Blennorrhœa.*

Blennorrhœic conjunctivitis may be prevented by repeated disinfectant injections into the vagina of the woman in labor. For that purpose a solution of three parts of carbolic acid in one hundred of water, or one of bichloride of mercury in one or two thousand of water, are sufficient. After the newly-born has been bathed, a few drops of a two-per-cent. solution of nitrate of silver, or a one-twentieth of a per-cent. solution of bichloride of mercury, are applied to the cornea. When the disease is established, both eyes are affected in most cases. When but one, the healthy eye must be covered with a disinfecting lotion and borated cotton, and its infection by sponges, towels, water, and fingers guarded against with the greatest care. The diseased eye must be kept scrupulously clean by pouring tepid water over the cornea, or (and) removing the pus by means of small pellets of borated cotton. To succeed in this the upper and lower eyelids must be turned out. This is not always easy, and is never satisfactory unless the cornea becomes perfectly visible during the manipulation. Once a day the application of a mitigated stick of nitrate of silver (nit. arg., 1 ; nit. sod., 2) is useful. It may be substituted by a two-per-cent. solution of nitrate of silver in water. In both cases the surface must be washed with a mild solution of table-salt afterwards, and ice-cloths, small and as dry as possible, applied every ten minutes or oftener. When the cornea is ulcerated, a few drops of a solution of sulphate of atropia (1 to 200) may be instilled several times daily.

17. *Umbilical Fungus.*

The umbilical stump requires frequent inspection. Unless it cicatrizes speedily, granulations will spring up from its surface and form into small tumors. They are either sessile or pediculated, and are apt to grow very fast. They are not sensitive, but apt to bleed. In some cases they are discovered on very close examination only, and may remain many years, even to advanced age. Exceptionally such a fungus is not, or but partly, the result of granulation, but consists mainly of the remnants of the omphalo-mesenteric duct (with unstriped muscular fibres, tubulated glands, and cylindrical cells) or allantois. Once it was found by Virchow to be a sarcoma.

It requires no excision. When it is pedunculated a silk ligature may be applied, and, after it has come away, the stump treated. Otherwise the little tumor requires cauterization or astringent and antiseptic applications. Nitrate of silver may be used, but must be neutralized by chloride of sodium immediately. Other applications are, a drop of liquor sub-sulphatis ferri once or twice daily; the powdered subnitrate of bismuth; iodoform; one part of salicylic acid with five parts of starch.

18. *Hernia.*

Congenital umbilical hernia (exomphalus) is called a fissure of the median line of the abdominal wall, which is the result of an arrest of development. When the fissure is but small and the sac contains intestine only, the condition is incurable. When the sac is large, containing at least a portion of the liver, together with intestine, the contents may be reduced and the cases cured. Twenty-four such cases have been collected by Kocher.\* C. Brenz reports the case of a girl weighing two thousand seven hundred grammes at birth. When the hernial sac had been reduced, which was accomplished with difficulty, he compressed the sac by means of a pair of pincers, removed it with scissors, applied three percutaneous ligatures, removed the clamp, applied the actual cautery to the stump, and covered it with antiseptic dressings. Both these and the ligatures were removed on the eighth day. The case proved

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\* A. Jacobi, *Intest. Dis. of Infancy and Childhood*, p. 267.



successful, though there was peritonitis as early as twenty-four hours after birth.

Acquired umbilical hernia, which contains small intestine and peritoneum, and is produced by a large size of the cord, leanness and insufficient development of the baby, and by screaming, coughing, and the straining consequent upon diarrhoea, constipation, phimosis, or anal fissure, demands reduction, which is almost always quite easy, and retention, which is by no means so easy, within the abdominal cavity. The usual shape of trusses is unavailing, or even injurious. Whatever appliance is used must be larger than the aperture, and not be too hard. Linen or lint compresses, plates of cork, covered with linen or lint, may be held in position by means of a bandage, to which they can be fastened by stitches or pins. Knitted bandages are more useful than those of linen, cotton, or flannel. Adhesive plasters are used frequently, but are generally too irritating on the sensitive surface of the infant.

Incarceration and strangulation of an umbilical hernia are very rare, but there is on record a fair number of cases in which herniotomy was performed successfully in infants of a slightly advanced age.

Inguinal hernia is a curable disease. When the short and straight inguinal canal of the newly-born becomes more oblique and the adjacent fat increases, in the course of a few years the rupture will disappear, provided a proper truss has been retained for a long time. During that period the intestines must not be allowed to protrude at all. The truss must be worn day and night, with the exception of such times when the infant is sleeping quietly. A good fit does not mean undue pressure. The testicle must be closely watched. It is found high up in the scrotum behind the hernia. Sometimes it has not descended into the scrotum, and is then mostly discovered in the inguinal canal. By gently pressing it downwards and applying the truss above, we not only protect it but facilitate a complete descensus.

### 19. *Congenital Constipation.*

Malformations of the intestinal tract, such as strictures or complete interruptions, will either terminate fatally or require

surgical treatment. The latter class includes imperforate anus and rectum. In these cases, where the obstruction is complete, we cannot speak of constipation. This condition may, however, be found to depend on an anatomical peculiarity which is quite frequent, and may give rise to mistakes in diagnosis and treatment. The colon descendens of the newly-born is quite long. The sigmoid flexure, which I have found to measure as many as thirty centimetres (twelve inches), is bent upon itself several times in the narrow pelvis. Thus the convolutions of the intestine will press upon and compress each other\* to such an extent as to result in obstinate constipation. In some extreme cases the babies died without or with colotomy, which was performed on the strength of a mistaken diagnosis. The treatment of that congenital form of constipation must be adapted to the anatomical condition which gives rise to it. Rectal injections alone are rational. They must be made daily, at least once a day, and continued up to the completion of the fifth or sixth or even seventh year. At that period the normal relations of the several parts of the intestine are accomplished, the pelvis becomes larger, and evacuation of the bowels easier. No purgative medicines must be resorted to, inasmuch as the obstacle is mechanical only. There is, however, a single indication for their administration,—viz., those symptoms depending upon constipation, which point to the absorption of intestinal putrid gases above the obstruction. Septic fever, high temperatures, and serious reflex symptoms—such as convulsions—may require the speedy evacuation of the bowels. Though such occurrences be rare, they are sometimes met with.

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\* A. Jacobi, *The Intestinal Diseases of Infancy and Childhood*, Detroit, 1887, p. 184.

(To be continued.)

## ON VENEREAL AND GENITO-URINARY DISEASES OF CHILDREN.

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(Continued from March Number.)

## IV.—DISEASES OF THE BONES.

THE affections of the bones may be divided for convenience' sake into two classes: those which occur during infancy and those which appear later in life, either during childhood or else at puberty and after. The lesions which appear at these two periods differ in degree rather than in kind, although the earlier affections are more serious and attended with greater deformity than the later ones. The long bones are the ones usually attacked, but it must be borne in mind that the flat bones do not escape. In the infant the first symptom which attracts attention is immobility of the diseased part, whether leg or arm, and the screaming of the child whenever the affected member is touched or moved. If motion be attempted, the child resists and cries, and when the limb is released, it at once drops, apparently dead and lifeless. This is the condition known as pseudo-paralysis, but which, as was pointed out in the previous paper, is not a true paralysis, inasmuch as the nervous system is not affected, but is really an affection of the bone, generally epiphysal, or else of the tendons and muscles of the part. On examination there seems to be no thickening of the bone to account for this condition, nor does the apparent paralysis extend to other limbs, arm or leg. Cassel, Henoeh, and others have noted and reported this condition, and the former (*Archiv für Kinderheilkunde*, 1884-85) gives a case in which this pseudo-paralysis was present without any enlargement of the bone being detected, and accounts for it on the ground that in light cases the bone is not immediately



attacked, but that the muscles and tendons of or near to the part are the seat of disease, and quotes Kassowitz to the effect that he (Kassowitz) has frequently seen changes of the muscles in heredito-syphilitic children, and then always at their points of insertion in the bone and in the tendons. In these latter cases it is usually associated with alterations of the bones at the junction of the diaphysis and epiphysis. Such may occasionally be the case, but in the large majority of cases the bones are affected, if not primarily, nearly simultaneously with the muscles and tendons. Examination then of the affected limb reveals a thickening of the bone at the junction of the epiphysis and the diaphysis, which is painful, and which usually invades the entire circumference of the bone; at the beginning it is of soft consistence, and not infrequently is accompanied by a sense of fluctuation. The joint is often affected, although this point has been denied by some observers, but there are enough reported cases to show conclusively that this is the case. In Cassel's patient (*op. cit.*) the joint was affected with disease of the epiphysis, and Somma (*Giornale Internazionale di Scienze Mediche* for 1882) gives cases where the knee-joint was attacked with inflammation and purulent destruction; in fact, a genuine syphilitic synovitis, with profound inflammation of the ligaments.

The lesions of the bone are due to an osteitis and a periostitis, in which important changes take place in the tissue of the part, and which I shall take up more fully when discussing whether there is any connection between rachitis and syphilis. The swelling goes on, to terminate in one of two ways, —either by resolution and recovery, or else it breaks down and abscesses are formed. Frequently before this occurs the bone becomes soft and spongy to the touch, and a fracture more or less complete takes place between the epiphysis and diaphysis of the bone. This is readily detected, provided the swelling is not very great, but even then it is often felt, and is not accompanied with crepitus.

The portion of the bone which is generally affected is the epiphysis, or rather the point of union between the epiphysis and diaphysis, and the humerus, the femur, the tibiæ, and clavicles are those usually attacked. It also occurs at the phalanges of

both fingers and toes. But in addition to these portions of the bones, the diaphysis may also be the seat of disease, and a swelling occurs at these parts which is tender and painful. Sometimes this swelling is diffuse, invading the entire length of the bone, and at others it is in the form of circumscribed nodules. An interesting case of the kind is reported by Lannelongue in the *Bulletin et Mémoires de la Société de Chirurgie de Paris* for 1883. The child, admitted into hospital on the 17th of January, 1883, when two and one-half years old, was born of a syphilitic mother but a sound father, so far as syphilis was concerned. The infant had evident signs of previous syphilis of the skin, mucous membranes, and of the bones, which began when it was twelve to fourteen months old. The affections of the bones were as follows: the articular extremities of the long bones were swollen and deformed. The diaphyses near the epiphyses were a little bent, and on some of them there were marked nodules. These enlargements were situated on the shafts of both tibiæ, both humeri, and of the left femur. Each of these bones showed one, and on testing the resistance of the bones on their surface, abnormal mobility without crepitation was found. There was also a painful swelling of the ulna of the right forearm at its upper portion and at the lower part of the left ulna. The ribs were swollen at their chondro-costal extremities, and the clavicles were equally affected.

The head showed well-marked cranial asymmetry. The right frontal prominence was very salient, and on the frontal bone near the suture were small periosteal nodules. The occipital prominences were symmetrical, developed, and separated by a deep furrow of an irregular surface. The child died on the 2d of February.

There were marked evidences of syphilitic disease in the viscera, but I shall pass these by and come at once to what was found at the autopsy in the bones. The bones of the skeleton were rachitic (*sic*), but a careful examination of the swellings of the diaphyses revealed the following condition: when a longitudinal section was made through and on a level with these swellings the periosteum was seen to be swollen. Under this swollen periosteum a spongy tissue was seen, the

osseous layers of which lay in a direction perpendicular to the surface of the old bone, in such a way that the section had a fibrous look. This spongy tissue was thickened to form the swelling, and was united with the old osseous tissue of the diaphysis of the bone.

The solid tissue of the bone was very much thinned, and presented in some places an incomplete transverse fissure; in others, a more oblique one. At this point an incomplete fracture of the bone had occurred, and on a level with the fracture a callus had formed, made up of abundant spongy tissue.

The spongy tissue of the swelling continued to grow thin under the periosteum as far as the epiphysis, which still exists. On a level with these points, section showed the various changes which are due to rachitis (*sic*).

Dreyfous, in the *Annales de Dermatologie et Syphiligraphie*, gives another case which occurred in a child older than the last. A boy seven years of age was born to a father who was syphilitic, and a mother said to have been free from this disease. The boy was born at full term, and three weeks after birth he developed an ecthyma, of which the cicatrices were still present, a chronic coryza, and conjunctivitis. He had had no regular treatment, except to take iodide of iron and cinchona wine. In July, 1883, when he was six years of age, a contusion on the surface of the right tibia was followed by a swelling, which was not opened, and which disappeared under the administration of mercurial ointment. For several months the boy had dragged his right leg, and for the last month he had had a swelling of the right knee, which was a little tender. At the lower third of the right humerus there was a large swelling, which was compact, hard, and fusiform in shape. This had been of one month's duration.

Examination of both tibiæ showed periosteal swellings on their internal aspect and upon their anterior border. On the forehead were two lateral, symmetrical swellings. There were no signs of rachitis. Under the use of mercurials and the iodide of potassium these symptoms subsided.

It is very apparent, then, that in syphilitic affections of the bones there are two varieties, an osteitis and a periostitis, the former one occurring in early infantile life, the latter later on



in early childhood or in commencing adult life. The former, of course, is the more serious of the two lesions, producing, as it does, such degenerative changes in the bones themselves, with deformities in the structure of the parts. The latter are more superficial, produce less degeneration of tissue, and are more amenable to treatment.

The changes which take place in the smaller long bones, such as the phalanges of the fingers and toes, are akin to what occurs in the larger bones, and are usually of the periosteal variety. They sometimes lead to necrosis of tissue, and nearly always to absorption of bone and consequent shortening of the phalanx. The former occurred in a case which came under my observation in the spring of 1879, and was reported by me in the edition of "Diday on Hereditary Syphilis," published by Wood & Co., in their Library of Standard Medical Authors for 1883.

The boy, aged five years, was brought to me for treatment of a dactylitis of the ring finger of the left hand. The trouble began early in the autumn of the preceding year, 1878, as a simple enlargement of the shaft of the first phalanx of the finger without any signs of inflammation. At the time of examination the finger was swollen, hard, and rather sensitive to the touch. It measured two and three-fourths inches in circumference. He also had a similar but smaller swelling of the second toe of the right foot. In addition to these bone lesions he had a pustular eruption on both thighs. The mother gave a syphilitic history, having had an eruption over the entire body, accompanied with alopecia, sore throat, and ulcerations. She had given birth to seven children, but had had no miscarriages. Of these, only two children were living, the child under observation and one younger, not seen. The one under my care had had snuffles when a baby, but nothing further could be obtained in the way of history.

"The child was brought under observation on March 20, 1879, and on April 22 it was recorded that the skin of the finger had ulcerated in several places and a slight discharge of thin pus exuded from these openings. The swelling was somewhat reduced, and the pain had diminished. In the toe the pain and swelling were both less; there was then no in-

flammation nor ulceration. On July 10, the swelling had materially diminished, and the discharge was less. There was a loss of power of extension in the finger. The bone had for a long time been necrosed, and in September a piece of necrosed bone was removed. The finger later on became useless from loss of motion, and, as the ulceration and necrosis were extending, the finger was removed. In the latter part of September the wound had almost entirely healed. February 12, it was noted that there was a slight thickening of the metacarpal bone the size of a small almond and similar in shape. This swelling was painless. The toe meantime also broke down with ulceration, but subsequently recovered without becoming necrosed."

When the diaphysis of the long bones is invaded it sometimes happens that a complete spontaneous fracture results. This is not a common occurrence, the only cases with which I am acquainted being three,—one, reported by Hutchinson, of a fracture of the humerus; another, by Volkmann, of a fracture of the radius; and a third by Behrend, where a fracture occurred in the humerus and femur in the same child. The case is reported in the *Berliner Klinische Wochenschrift* for 1882, and is of great interest.

The child came under observation in June, 1880, when eleven weeks old, with a papular eruption of the entire body and a pseudo-paralysis of the right arm. Fourteen days before the mother had discovered that the child's arm was painful on motion, but saw nothing abnormal in it. Examination showed that there was a separation of the epiphysis from the diaphysis of the lower portion of the right humerus. The child was emaciated, its face was wizened and senile, and the panniculus adiposus was entirely absorbed. Sublimate baths rapidly induced recovery and the child increased in weight.

Six months later, in January, 1881, without any apparent cause, a sudden swelling appeared in the middle of the left humerus and of the left femur, which caused these members to swell to double their normal size and to become exceedingly painful. Examination showed both bones were fractured. Supposing that the cause was due to syphilis, the mercurial baths were again used, and the arm and leg were

put up in splints, which, on removal two and a half months later, showed that complete union had taken place without any deformity resulting.

This case is of interest as showing not only that spontaneous fracture may occur in cases of syphilitic disease of the bones in hereditary syphilis, probably due to a gummous osteomyelitis, but that separation may take place between the epiphysis and the diaphysis. This happens with or without suppuration. In the former case union takes place, in the latter the head of the bone is lost and ankylosis of the joint ensues. It is in these cases that effusion into the joints takes place, such as is mentioned by Somma (*op. cit.*) and others.

Besides these lesions of the long bones, attention has been called by Moullin (*British Medical Journal* for 1884) to a form of osteitis which is generally chronic, and usually affects the tibiæ, rarely any other of the long bones, causing peculiar deformities. Usually only one part of the bone is affected, either the upper or lower third, or else the shaft by itself, without the line of separation between the epiphysis and diaphysis being concerned. Enlargement takes place in all directions, and a portion of the tibia projects, having a smooth, even curve forward, and bulges out on either side, so that the crest of the tibia no longer stands out sharply, but the bone encroaches on the muscles behind as if it had grown in all its dimensions, and from being unable to accommodate itself had been forced out on all sides, especially towards the anterior surface, where resistance is least. Occasionally, when the lower end is involved, and there is still a growing line between the shaft and the epiphysis, an actual increase in length takes place, causing some distortion of the foot and proportionate inconvenience. This form of hyperostosis may commence when the patient is eight years of age, but it is much more common a few years later; it may make its appearance as late as twenty-two years. When it occurs early in life both legs are usually affected, and then it is often put down to accidental causes; when it begins late in life usually only one leg is affected; and there is this further difference between them, that while in the former case the change appears to be limited almost entirely to the bones, and to occasion no greater inconvenience



than nocturnal bone-pains and a constant sense of weight, in the latter instance the skin and subcutaneous tissues become affected after a time, and a number of apparently small, imperfectly circumscribed gummata form all over the affected limb, leaving depressed cicatrices or ulcerations with exposed bone, which are hard and dense at their bases. In one case, where the disease appeared for the first time in a boy eighteen years old, and when the tibia was fairly restored to health, although much distorted, large gummata suddenly appeared when the boy was twenty-two years of age, which seemingly involved the whole of the lower third of the bone, and rapidly destroyed the skin and threatened the ankle-joint, which, as is often the case, was full of fluid.

In all the cases which he had seen, Moullin goes on to say, there were other and clear signs of syphilis present, such as deformed teeth, interstitial keratitis, etc., and wherever it was possible a family history was obtained and noted.

It is evident that these lesions are referable to the late stage of inherited syphilis if we place the limit between the early and late stages at five years of age, which seems to me to be a fair period, if we must retain a chronological limit, although many consider that all symptoms appearing after the age of two years should be called late. It is furthermore clear that the lesions which occur then are more of the periosteum than of the bone proper, and, most important of all, are not attended with the degenerative and destructive changes of the bone and medulla which we find to be the case in the early types of the disease.

As has already been stated, the flat bones are also affected, and of them all the cranial bones are the ones most likely to be affected, giving rise to a peculiar deformity. On the frontal bones, near the sutures between them and the parietal bones, swellings occur which are usually symmetrical, and due to a periostitis. This inflammation rapidly extends to the osseous tissue which is being formed, causing degenerative changes there. These enlargements are usually of a pink or violet hue at the commencement, gradually change from a soft to a hard consistence, and induce premature ossification of the sutures. Parrot gave these elevations the name of "natiform" because

they bear a fancied resemblance to the nates. Concomitantly with these frontal enlargements similar ones appear on the occipital bones, which are connected with the frontal swellings by furrows, and the two frontal and the two parietal knobs are also connected by similar furrows. As premature ossification of the sutures takes place the brain is forced out of the line of its natural development, and expanding along the lines of least resistance, produces asymmetrical deformity of the skull, which Parrot considered as pathognomonic of syphilis. Gibert, at the Congr s de l'Association pour l'Avancement des Sciences M dicales, 1877, showed two of these natiform skulls, one of which came from a child which was rachitic, the other from a syphilitic child. Parrot considered the first one as also syphilitic.

Cornil, at a meeting of the Soci t  Anatomique, *s ance* of November 29, 1878, exhibited specimens from a syphilitic child born of a syphilitic mother where there were magnificent cranial exostoses.

As the disease progresses and degenerative changes take place in the tables of the skull, softening and erosions of the bone occur, which lead to perforation, a condition analogous to what is seen in fractures of the long bones.

The pathology of this form of osseous disease is of great interest as bearing upon the much-debated question whether syphilis produces rachitis, and whether the latter is only an hitherto unrecognized form of the former. Parrot, of France, who has done so much to advance our knowledge of these lesions of hereditary syphilis, states his belief that syphilis is always the cause of rachitis, while others, good and well-qualified observers, are as decided in the contrary view. Perhaps the most correct and sensible view is that formulated by Fournier in *l'Union M dicale* for 1886, where, in discussing the question of rachitis and hereditary syphilis, he puts it as follows: Agreeing in the main with the view that Parrot holds, that rachitis is frequently met with in persons affected with hereditary syphilis, he would differ from him in regarding it as an unfailing sign of syphilis; that is, in considering all cases of rachitis as syphilitic. He would rather formulate it thus: That rachitis is a result of a general disturbance imported by syphilis

into the organism ; or, putting it into other words, that syphilis is a considerable affluent in the production of rachitis, but it is not the only one.

In taking up the question of the pathology we shall be helped towards a solution of this vexed question among syphilographers. It is by no means new, as many of the older writers on syphilis have held that rickets and scrofula are but two of the varied forms which inherited syphilis may assume. This view has among more recent writers been abandoned until the researches of Parrot, Wegner, Waldeyer, and Koebner on the osseous lesions of hereditary syphilis, and the later point-blank statement of Parrot as to the relation which exists between these two diseases, has caused a suspension of judgment and a more careful review of the grounds *pro* and *contra*.

Waldeyer and Koebner, in *Virchow's Archiv* for 1872, give their views, of which the following summary may be taken as an expression (*Revue des Sciences Médicales*, 1873):

The lesions may be divided into two groups, those which are accidental and those which are constant. Those of the first group are:

1. An internal gummous periostitis of the frontal bones.
2. Granulations of varying size upon the external periosteum of the cranium.
3. Induration and thickening of the dura mater, which adheres strongly to the cranium.

The second are those which affect—

1. The cartilages and epiphyses of the bones. These undergo a marked proliferation of the cartilaginous cells and a modification of the medulla of the bones.

2. When there is a separation of the epiphyses between this and the diaphyses there is found a soft gelatinous tissue, which is vascular but non-purulent.

3. There are in the spongy layer a quantity of blood-vessels as abundant as in the normal state.

4. In the diseased osseous tissue a large part of the osteoplastic material is converted into a mass of granulations and fusiform cells.

Parrot's latest views, as has been stated, ascribe syphilis as the universal cause of rachitis. He then goes on to lay down



the points of difference which exist between syphilis and rachitis, which may be tabulated as follows:

<i>Syphilis.</i>	<i>Rachitis.</i>
1. No spongy tissue.	1. Spongy tissue.
2. Osteophytic osseous layers.	2. Peripheric spongy layers.
3. Augmentation of diameter by these layers.	3. Augmentation of diameter due to spongy tissue.
4. Osteomalacia and decalcification hardly marked.	4. Osteomalacia and decalcification considerable.
5. Gelatiniform degeneration, which may lead to separation of epiphyses.	5. Never any gelatiniform degeneration.

As the disease progresses these lines of demarcation become less well defined, and the distinctive points, although present, are not so well marked. Reduced to the tabular form they are expressed thus:

<i>Syphilis.</i>	<i>Rachitis.</i>
1. Osteophytic layers with medullary spaces between.	1. No osteophytic layers.
2. Augmentation of diameter from osteophytic layers and spongy tissue.	2. Augmentation of diameter by spongy tissue only.
3. Bones flexible, but less so than in rachitis.	3. Bones flexible.

Parrot holds that the bones most frequently affected are, first the long bones, except those of the hand and foot; then the scapula, the iliac bones, and the skull; after these the ribs, clavicles, the metacarpal and metatarsal bones, and last of all, the vertebræ. The symmetry is constant.

He then goes on to divide the pathological progress of the disease into four stages. The first one is seen in the foetus or the child which has died soon after birth. In these cases the bones are heavy. Under the periosteum are seen osteophytes of a straw color, varying in thickness, which are friable and adherent. In some places the bone is notably thickened. The chondro-calcareous layer which separates the cartilage from the spongy tissue is slightly thickened.

In the second stage the characteristics are the same as in the former, but less marked. The bone is not so heavy and the

osteophytes are less dense, more regular and porous. The points of election are the lower portion of the humeral diaphysis, the upper part of the cubital diaphysis, the anterior face of the femur, and the inner aspect of the tibia. The characteristic lesion in this stage is a gelatiniform atrophy of the bone. The spongy tissue is the one most altered, especially in the neighborhood of the extremities. Here are found stains or spots sometimes of a yellow, sometimes of a red, color, which are soft, and of irregular contour. On the surface is seen a substance resembling jelly, with filaments scattered throughout it. This alteration extends and forms islands in the compact tissue of the diaphysis, in the chondro-calcareous layer, and finally in the cartilage. This atrophy, according to Parrot, gives rise to the condition already noted and ascribed by other observers to different causes,—to wit, the pseudo-paralysis of syphilitic children. When the lesion is more advanced, fracture of the bone occurs in the vicinity of the cartilage with resulting deformity. Pus may also form in the articulations.

The third degree is that of osteomalacia (Parrot's "medullization"). Heretofore the lesion has been osteophytic, but now the medullary tissue becomes actively developed and gradually takes the place of the osteophytes. Between the bone proper and the osteophytic layer spaces are formed, divided by fine trabeculæ, which are filled with medullary matter. This takes place especially at the lower extremity of the humerus.

The fourth stage now shows substitution of the chondro-calcareous layer by spongy tissue in the periphery of the diaphysis and its extremity, and it is in this stage, where the osteophytic layer is attacked by osteomalacia, that it begins to resemble rachitis. In the first two stages syphilis and rachitis are entirely different. In the third stage the two diseases begin to show minor degrees of similarity, but not until the fourth stage is reached, when softening and sponginess of tissue take the place of bone and bone-forming material, is it that the two diseases may be fairly said to resemble each other. Parrot further states that another point of resemblance exists between the two,—viz., that rachitis is not seen in the new-born infant until at or after the sixth month of extra-uterine life,

and that the same is true of the fourth degree of heredito-syphilitic osteitis.

Such is the position of this much-mooted point among syphilographers, and should subsequent investigation prove the correctness of Parrot's views, it would go far to show that syphilis may, in some instances, be the cause of rachitis in the infant, but it is not possible at present to admit that it is the universal cause. It certainly does not cause rickets in grown-up children who are attacked with syphilitic bone lesions after they have passed the period of infancy, and the reason it does so in infants is perhaps explained on the ground that syphilis is more apt in them to be marked by degeneration, and that their tissues are younger and less able to withstand the ravages of the disease.

A peculiar deformity of the wrist occurring in children who are the subjects of inherited syphilis has been described by Engram, of Georgia, under the heading of "Concentric Enlargement of the Wrist in Hereditary Syphilis." He had seen thirteen cases in all, twelve in his own practice and one in that of Dr. Vinson, of the same State. Engram notes that in his cases the lesion occurred in children ranging from one month up to eighteen months of age. Vinson's case occurred in a child about twelve months of age.

In describing the lesion Engram writes that "the concentric enlargement has more the appearance as if two fine silk ligatures had been tied around the wrist immediately above the joint, the strands being placed about half an inch apart and tied tight enough to hide themselves in the flesh. To the touch they have all the dense feeling that callus does when thrown about a fracture."

The doctor gives sketches of three cases of the kind which he has seen, and of the first one he says, "This was sketched off-hand from a case that fell under my care in November, 1884. The mother of this child I treated for syphilis three years previous to its birth, or, rather, I prescribed for a couple of Hunterian chancres. I think she received no systematic treatment looking to systemic eradication. The child when I first saw it was covered with eruptions peculiar to this disease."

In the cut given of this case it looks as if the child had on



a couple of bracelets of nearly equal thickness, one above the other, divided by a deep sulcus. In the second the deformity bears a close resemblance to that seen in fracture of the radius near the joint at the lower third, and has only one enlargement. The third one looks very much like a "silver fork" fracture, and of this the doctor writes: "A case fell under my care in the early part of 1884 which very much simulated fracture of the lower extremity of the radius." (It looks more like a fracture through both radius and ulna.—F. R. S.)

"This case was very interesting, as crepitation could be distinctly detected on motion of the hand at the wrist-joint. This perhaps was produced from deposit or other abnormal conditions of the wrist-joint. Dr. Vinson's case was similar to this, except that there was no crepitation. The doctor's case might have well misled, as the child had a fall a day or so previous to falling in his charge."

The cases are certainly singular ones. It would be interesting to know if they occurred in negroes, as in the black races syphilis produces more serious disturbances than in the white, so far as my experience goes.

Besides the cranium and the scapula, the hard palate is sometimes attacked in children who are the subjects of hereditary syphilis. It usually commences as a periostitis, which progresses rapidly, terminating in ulceration and necrosis of the bone, which ends in perforation, and occasionally in complete loss of both hard and soft palate. Such a case is reported by Noquet in the *Révue Mensuelle de Laryngologie*, etc., 1883, as occurring in a child ten years of age, where in addition to the total loss of the palate there were ulceration of the tonsil and otitis, with deafness.

Other deformities have been written on as originating in hereditary syphilis, and the most notable of them have been harelip and cleft palate. In 1877, Brown, of Baltimore, in the *Archives of Dermatology*, reports three cases of harelip which occurred in infants who were the subjects of inherited syphilis. In the first one the mother was probably syphilitic, and the child, born at full term, although apparently perfectly healthy, had a cleft in the hard and soft palate and a harelip of the left side. An operation made to remedy this defect

was unsuccessful, and later on, after the wound had entirely broken down, a papular eruption broke out over the entire body, followed by a desquamation of the palmar surface of the hands.

The second case is too vague to be of much use as proof one way or another, but the third one is especially interesting, and I shall give it in full. It is marked in his report as "Cases III. and IV. Mrs. L. is a private patient of mine, with whose history I am quite familiar. She has been married three times. By her first husband, who was healthy, she had but one child, who has reached manhood in splendid health. From her second husband she contracted what the physician called 'the seven years' pox.' The tolerably clear statement which she makes of what she has suffered, the numerous scars on the different parts of her body, the history of periosteal and pericranial nodes and pains, together with the appearance of her mouth, confirm the doctor's opinion of her disease. After the nature and source of her malady were made out she separated from her husband without bearing, and before long was married to her third husband, who enjoys excellent health.

"Since her last marriage she has had wellnigh one dozen pregnancies, all but three of which, and those the last, ended in abortions. Two of these three which came to full time had cleft palates and harelips, and died very soon after birth with 'catarrh.' It was during the next to the last pregnancy that my attention was called to her syphilitic condition, and I then instituted a vigorous antisymphilitic management. Her last child is now living, and with the exception of some maculæ scattered here and there over the trunk has been all right. As a precautionary measure, mercurial inunctions are occasionally used with the hope of subduing any syphilitic tendencies that may be lurking in her system."

Brown further goes on to say that at the time his attention was being called to these cases his former colleague, Professor Noel, reported to the Pathological Society two cases of cleft palate which he had seen in syphilitic children of different parentage.

It might be objected to these cases that it was a question merely of coincidence for syphilitic children to be affected in

this manner, and so far as the first two are concerned that plea might fairly be raised; but with the third there is one peculiarity,—to wit, that of three children which came to full term two were affected with cleft palate at a time when the mother was presumably not subjected to antisyphilitic treatment, but when she is, the child was born without this deformity. Then there are Noel's cases to be considered, two in number, making six cases of syphilitic children born with this defect, a condition hardly to be set down to the score of coincidences. Perhaps it is not so much to be wondered at after all, if we regard these lesions as due to arrested or defective development, and syphilis is notably a disease which induces this condition. If we grant that postulate, then any disease which causes an arrest of development may produce this same condition, a point which we shall find verified when we come to consider the so-called syphilitic teeth, which, although most frequently met with in syphilitic cases, is sometimes met with in persons entirely free from syphilis. And as with them so with these cases of harelip, cleft palate, and the so-called rachitis. They are merely instances of arrested development, caused in one instance by syphilis, in another by tubercle, and perhaps in other instances by other causes.

16 WEST THIRTY-SECOND STREET, NEW YORK CITY.

(To be continued.)

## ON CHOREA, SPASMODIC TIC, AND HYSTERICAL SPASMODIC DISORDERS OF CHILDHOOD.

BY C. L. DANA, M.D.,

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(Concluded from March Number.)

SPASMODIC TIC AFFECTING LOWER LIMBS, THEN ARMS,  
THEN INSPIRATORY MUSCLES AND FACE, WITH CHOREIC  
TWITCHINGS.

CASE IV.—Louis L., age eight, New York. Family healthy, but the mother is of very nervous temperament. Is



one of six children, all the others healthy. Had cerebral meningitis at two; pneumonia after it; at six had typhoid fever. Otherwise has been healthy. Is a bright boy and well grown. Present trouble began in 1884, when he was seven years old. The cause was unknown. It first showed itself with jumping as he walked. The moment the swinging foot struck the ground and began to receive the weight of the body the flexors of the limb quickly contracted, so that his gait was interrupted continually with hops, to the great amusement of his school-fellows and the ever-appreciative audience of his contemporaries on the streets. This lasted for four months. It then became less, and the arms were affected, being thrown up suddenly. After two months more the chest-muscles and neck and face were involved, and he had among other symptoms inspiratory spasm with a croupy noise (tic of the diaphragm). The face had then become somewhat affected with choreic movements. The trouble, as is seen, was an ascending one. It was bilateral; there was no paralysis.

It had continued with remissions for a year, when he was seen by me. He then had a slight amount of jumping, inspiratory spasm, choreic twitchings of face, neck, and arms; the movements being generally bilateral. The inspiratory spasms came on in the form of "seizures" and then ceased for a time. After a few weeks' observation he had peculiar attacks like those of convulsive tremor, or paramyoclonus multiplex, in which his body would be shaken off his chair. His mind was clear, and not irritable. He gave a history later of malarial infection. No organic disease could be found. His eyes showed some refractive errors; these were corrected by glasses, which seemed to improve the facial movements, but did no more. Zinc, arsenic, quinine, glonoin, did not improve him. Galvanization, faradization, and hyoscyamin did. He recovered after about two months' treatment. He has had two short relapses since.

*Chorea Procursiva.*—Laycock has described, as a separate kind of chorea, a rhythmical or trochaic form, which, he says, affects children, principally girls, and shows itself in spasmodic rhythmical contractions, or in sudden rotating or procursive movements of the body. This has been called chorea procur-

sive, or chorea festinans by other writers, and in many cases is accompanied with vertigo, when the condition of the patient is similar to that of a person who has been whirling around a number of times. Such cases always seem to have decidedly hysterical characters, and may be classed with the salaam spasms and chorea major, so called. I have a very good illustration of this and of the efficacy of treatment.

CHOREA WITH HYSTERIA, OR PROCURSIVE CHOREA—SLIGHT CHOREIC MOVEMENTS—LOCOMOTOR ATAXIA AND STATIC—OBJECTIVE VERTIGO—SUDDEN INVOLUNTARY MOVEMENTS OF THE BODY SIDEWAYS—CONTRACTIONS OF FOOT—HYSTERICAL MENTAL STATE.

CASE V.—James McC., age twelve, is one of a family of twelve. The mother is rheumatic, the father healthy. No neurotic element was found in the parents. The boy had always been delicate, but had had no nervous affection. He was bright, a good scholar. He had scarlet fever when five years old, followed by an attack of rheumatism. He was seen by me on March 16. For five weeks before he had had chills, so called, every other day, and for two weeks had had asthmatic attacks. The disease was noticed three days before, by the child's repeated stumbling and falling. The child was pale and had no appetite. He showed no other important objective physical symptoms aside from those of a spasmodic nature. He had very slight choreic twitchings, often not noticeable at all. His chief trouble was the inco-ordination and giving way of the legs. This was so great that he had to crawl about the house on all fours. Even while standing the limbs would suddenly bend beneath him and he would fall. Besides this he often had attacks in which he would raise his hands above his head and run violently sideways, always towards the left, until he struck the wall or some piece of furniture. These movements were accompanied with sensations of vertigo, objective in character. He also showed great mental excitement, and was often in a thoroughly hysterical condition. For a time he had contractures of the left foot involving the peroneal group. The symptoms led me to a diagnosis at the time of hysteria with chorea.

The patient was not benefited at all by quinia, iron, arsenic,

or bromides, but under bromide of zinc he improved instantly and very rapidly, and was well in seven weeks from the time the first symptoms were observed. The cause is unknown, unless it be malaria, which I am sure sometimes brings out chorea,—*i.e.*, is an exciting cause.

*Tic Coördiné.*—There are many persons who go through life with some trick of speech, of gesture, or some peculiar grimace. It may be only a shrug of the shoulder, a twitching of the eyes, a sniff. These various movements are described by Charcot as *tics* of the co-ordinate kind. The spasmodic motion is of itself normal, but is inappropriate and misapplied.

Many have perhaps noticed the *tic coördiné* of a distinguished after-dinner speaker, who always dances up on his toes in the course of his eloquent remarks. Perhaps most speakers acquire nervous habits peculiar to themselves or their class. I have noticed that old preachers of the carefully rhetorical type shut their teeth and draw out the angles of the mouth between the finer periods. Mr. Dickens vividly painted the *tic coördiné* of Mr. Pickwick, who always spoke with his hand beneath his coat-tails, involuntarily caressing his sacral region during the flow of his remarks.

Perhaps, strictly speaking, this class of *tics* should be made to include only the spasmodic movements that occur at irregular intervals independent of voluntary movements. Then we should exclude the many nervous habits that accompany the innervations of speech, gesture, locomotion, etc.

*Habit Chorea.*—These peculiar movements are very often seen in children, and Dr. S. Weir Mitchell has described some of them in his work on nervous diseases, section viii., under the name of “Habit Chorea.” He speaks of this disorder as “having a certain kinship to ordinary chorea,” a view in which I quite agree. The intimation that it is amenable to the same treatment as that employed for chorea does not, however, accord with my experience.

To summarize this portion of my remarks, I would say that I have tried to show that, leaving out epilepsy, the choreic functional spasmodic affections, more especially of childhood, may be divided into those (1) of common chorea (2) of the spasmodic tics, and (3) of hysteria. That in chorea the spasms involve



the lowest centres, in hysteria the highest, while tic furnishes a kind of connecting link. That these disorders may exist together, that one may lead to the other, but that they are nevertheless of a really different character, and that the significance and distinctness pathologically and clinically of the *tics* deserves to be much more appreciated than it has been done.

## APPENDIX.

Summary of records of 130 cases of chorea, of Sydenham, with reference etiology, course, complications, treatment.

*Age*.—Average age, 12.8 years.

Maximum, 35 “

Minimum, 5 “

Period of greatest frequency, 5 to 15 years.

From 5 to 10 years, total number, 51.

11 “ 15 “ “ 55.

16 “ 20 “ “ 13.

21 “ 30 “ “ 6.

31 “ 35 “ “ 1.

*Sex*.—Male, 35.

Female, 83.

Above age of 15.—Male 6; female, 11.

*Seasons*.—March, April, May, 41.

September, October, November, 30.

December, January, February, 27.

June, July, August, 22.

Of thirty relapses, or second attacks, seventeen occurred in February, March, April, or May; 6 in January and June. Relapses occurred oftenest in the spring, next in the fall.

*Heredity*.—In one case the father, in one an aunt, had had chorea. In twelve per cent. of cases one or both parents were of nervous temperament. In eight per cent. of cases one of the parents was rheumatic.

*Rheumatism and Heart-Disease*.—In only seven cases was there a distinct rheumatic history. In eight cases there were mitral regurgitant murmurs; in two functional hæmic murmurs. Among twenty patients who had relapses only three had heart-disease; among eight with heart-disease three

had a relapse. Hence heart-disease does not much predispose to relapse. One patient, now in her fifth attack, has no cardiac trouble. One patient, however, got mitral trouble during an attack of rheumatism, and a few years later developed chorea.

*Exciting causes.*—In fifteen cases the cause assigned was fright, or mental shock, or fright and injury. In two, over-study; in three, rheumatism; in two it followed measles; in one, scarlatina; in three, ague seemed to be at work; in one it followed matrimony (without pregnancy); in two it was a chorea of pregnancy. In many cases an exciting cause could not be found.

*Side first or more affected.*—In thirty-three cases the right side; in twenty-four the left. When a relapse occurs soon after the first attack, the opposite side is likely to be involved. When attacks return every spring or fall, the same side continues to be more affected as a rule.

*Recurrence.*—Thirty patients had more than one attack.

Of these 18 had 2 attacks.

6	"	3	"
3	"	4	"
2	"	5	"
1	"	7	"

*Average duration.*—Of twenty-one cases which came to me in the subacute stage, the duration of the disease was from nine to ten weeks.

In 2 cases, 5 weeks.

"	2	"	6	"
"	1	"	7	"
"	6	"	8	"
"	2	"	10	"
"	8	"	12	"

Several cases lasted, with ameliorations, for from one to four years.

*Sleep* in many cases is good. If the disease is at all severe, however, the child is very restless, and sleep is broken. Parents sometimes say that the choreic movements continue in sleep when it is simply a restless tossing. In severe cases the child is delirious and has a rise of temperature. In some cases the choreic movements undoubtedly do persist in sleep.

*Metastasis with other diseases.*—I have seen asthma in a child of fourteen disappear and migraine take its place, and I have seen sciatica apparently substitute itself for asthma in a woman of thirty-eight. I have had a case of epilepsy in a woman of twenty-five who, as a child, had asthma. In three of my choreic cases there was a history of asthma, and in two the asthmatic symptoms disappeared with the full development of the chorea. Enuresis sometimes complicates chorea. Pepper reports a case in which it suddenly took the place of the choreic symptoms for a time. Jones reports a case in which chorea took the place of epilepsy.

*Treatment.*—That treatment is of benefit in chorea, in shortening the disease, or preventing chronicity, and in relieving symptoms, I have no doubt.

Some time ago I reported the results of the careful anodal galvanization of the brain in this disease. Since then I have had additional strong evidence to confirm me in a belief of its efficiency. I would strongly recommend that the rheostat and galvanometer be used in giving the current, and that from one to three milliamperes be given daily.

I can corroborate the general testimony as to the value of arsenic. In some cases bromide of zinc does better; and in one case improvement followed amyl nitrite. After treating a case for two weeks at least improvement ought to be noted. If it is not, then some change in treatment is indicated. The rest treatment I find utterly impracticable, for ordinary cases at least. One cannot keep a choreic boy in bed, unless he is so bad that he cannot walk any way.

Zinc is a good remedy in chorea, nearly equal to arsenic. It can be given in the form of the valerianate, bromide, or sulphate. I prefer the bromide. In any case it should be pushed to the limit of tolerance,—*e.g.*, gr. v–xx, t. i. d.

I have not observed that cold douches or the ether spray to the back do much good. Hyoseyamin acted very well in three of six cases. Helenine acted well in three cases.



## PNEUMONIA CROUPOSA "A FRIGORE."

BY H. LONGSTREET TAYLOR, A.M., M.D.,

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ARE all cases of croupous pneumonia due to the presence of a specific cause, the pneumococcus, or Fränkel's bacillus, or are there cases which are so evidently due to the influence of cold and exposure, or to other diseases in the system, that it is impossible to attribute them to the action of specific micro-organisms? Examples of this latter class are seen in the cases of malarial pneumonia, and in the cases of meningitis and typhoid fever with a pneumonia as a complication. Juergensen says that it is a well-established pathological doctrine that two diseases may coexist in the organism, but we do not, under these circumstances, see such a profound influence of the one upon the other as the malarial fever exerts upon the course of the pneumonia. In certain cases of malarial pneumonia the solidification of the lung makes great advances coincident with the malarial paroxysm, but remains stationary in the intermediate periods, and the very rapid disappearance of both diseases, if we admit that there are two, under quinine is certainly very suggestive.

Neither Fränkel's bacillus nor Friedländer's pneumococcus has been demonstrated in all cases of croupous pneumonia. That probably the majority of cases of croupous pneumonia are due to the presence of specific micro-organisms cannot be doubted, especially when the disease assumes almost epidemic proportions, but at the same time cases do occur in which it is impossible to deny that the etiological factor of meteorological changes, so universally accepted for many years, has been more than a mere coincidence. When any doctrine has been accepted by the leaders of medical thought for years there are usually many stubborn clinical facts in support of it that are

hard to combat, and the rôle of cold in the production of pneumonia and pleurisy is one of these.

It is probable that there are in reality several varieties of pneumonia, which it is impossible to differentiate clinically, and that but a proportion of all cases are to be classed among the essential fevers. Neither can gross nor microscopic pathology show us any difference in these forms, but probably biological differentiation will do so, when that science has made further progress in elucidating the causation of disease.

As has been well said upon the subject of cold and exposure, if the general public could be educated to disregard their action in the causation of disease as thoroughly as the ultra specific causationists, we would soon have a flood of pneumonias and pleurisies, not to mention many other diseases, that would go a long way towards reinstating this time-honored etiological factor in the position from which it has been so unceremoniously expelled by the dominating micro-organism. The following cases illustrate this point:

In the Home for the Friendless and Foundlings of this city I had the opportunity of observing and examining after death two cases of croupous pneumonia in infants, evidently due to exposure. It was in the month of December, and at that time nineteen infants under a year of age were in the institution with their mothers. These infants were kept separate from the foundlings, and during the day were in a large ward, while at night they slept in small rooms with their mothers. These sleeping-rooms have accommodations for either two or four women with their infants.

The health of these mother babies, as they are called, to distinguish them from the foundlings, had been unusually good. There had been no cases of contagious diseases among them for months, no severe attacks of bronchitis, no meningitis, nothing, in short, but an occasional turn of indigestion and a few cases of skin-diseases requiring medical care. On the evening of the 13th of December the mother of H. L., a strong, healthy child, eleven weeks old, went to her room, which she shared with the mother of H. H., also a strong, fat child, aged ten weeks, and was greatly surprised to find the window up and the crib of H. H. placed directly under it.

The room was thoroughly chilled, as the night was bitterly cold and a northwestern blizzard was howling and blustering through the city. The woman was sound asleep in her bed, and it is not known how long she had been there. The second woman closed the window, put her baby in its crib and retired.

Her attention was called to the condition of the other woman's infant about three o'clock in the morning by the noisy breathing and general restlessness of the child. She called the mother, who took it to the night nurse. At this time it had a temperature of  $103.5^{\circ}$ , its breathing was exceedingly rapid, while spasmodic twitchings of different groups of muscles showed that general eclampsia was imminent. The temperature was rising rapidly, and in accordance with the general instructions for such cases, the baby was given a bath. Early in the morning I saw the child. The temperature was almost  $104^{\circ}$ , the inspirations were increased in frequency, and the heart's action rapid and weak. It was in great distress, and was very nervous. A persistent red line followed the track of the finger-nail. The action of the pupils was normal. Baths to keep the fever within bounds, a poultice-jacket over the entire thorax, and fifteen drops of whiskey every hour was ordered. No diagnosis could be made, as the physical examination of the chest was negative.

The infant sank rapidly, dying twenty-two hours after its condition attracted attention in the night, and twenty-seven hours after it was found under the open window. The only additional symptom was a cough that came on a few hours before death.

The autopsy was made nine hours after death. The body was plump and round and well developed for an infant ten weeks old. The abdominal organs were normal in position and structure. The lungs did not collapse when the thorax was opened. The lower part of the visceral pleura of both sides was opaque and of a dark blue color. This was uniform throughout. The lungs on section presented the following appearance: The upper lobes on the right side and the upper lobe on the left side were intensely congested, but crepitated and contained air. The lower lobes of both lungs were of a



dark red color and contained no air. The liquid from the cut surface was but slightly frothy. The brain was normal.

The diagnosis was bilateral croupous pneumonia in the stage of engorgement, just passing into the condition of red hepatization.

The same day that this autopsy was made the second baby from this ill-fated room was suddenly taken very sick, with a high temperature, rapid and difficult breathing, and accelerated pulse. The child had not been well since the night it passed in the cold, and had been in the nursery during the two following nights. In the beginning its symptoms were much the same as the first child had shown. The same course of treatment was followed. On the second day the baby was coughing, and dulness, with bronchial breathing, could be detected over the lower part of the right lung. Forty-eight hours after the beginning of the acute attack the second baby died. The post-mortem examination confirmed the diagnosis of croupous pneumonia confined to the lower lobe of the right side.

That the death of these two babies was due to the exposure of cold air cannot be denied. That the disease was croupous pneumonia is shown by the clinical history and post-mortem appearance. The involvement of entire lobes in the process, with well-defined lines of demarcation at the boundary of the lobes, was very apparent in every one of the numerous incisions made through the inflamed lungs.

No other cause except exposure can be found. The perfect state of health of the two babes before their exposure is shown by their clinical histories and the condition of all organs except the lungs after death. They had been in the Home since the first week in November. They had had no bronchitis or other disease requiring medical attention. Their mothers had an abundant supply of good milk, and one of them has since served as a wet-nurse, and the infant has thrived on her milk.

Had these lungs been examined biologically, in all probability neither Fränkel's bacillus nor Friedländer's micrococcus would have been found. Neither meningitis, typhoid fever, nor malaria were present. The verdict must be that these cases were due to cold unaided by anything else.

## Current Literature.

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### I.—HYGIENE AND THERAPEUTICS.

Vaughn: Tyrotoxicon, and its Relations to Diarrhœa in Children. (*Gaz. Med. di Roma* [abstracted], October 1, 1887.)

In a recent paper concerning the nature and treatment of cholera infantum, the author has demonstrated the essentially poisonous nature of a substance which he has isolated from stale milk, and called *tyrotoxicon*. He observed that a number of children and adults, by drinking warm milk a number of hours after it had been drawn, showed evidences of poisoning. The time during which the milk had stood was sufficient for the action of an organized ferment to produce decomposition. The tyrotoxicon is chemically a diagenbenzol, which is decomposed at a temperature just below the boiling-point. It is formed rapidly when the milk is kept in a warm place and in a narrow covered vessel. A grain to a grain and a half given to kittens produced violent vomiting, diarrhœa, and death in a short time. Smaller quantities administered daily caused diarrhœa, vomiting, and rapid emaciation. The author does not maintain that this is the only poison which is obtainable from milk, and consequently from ice-cream, etc., but it is certainly one of the products of putrefaction, which has a decidedly cathartic effect. His conclusions with reference to the precautions which should be observed both in keeping milk and in preparing it for use are most important, and are as follows:

1. The cows must be healthy, and their milk must not be mixed with that from diseased cows.
2. Cows should not be fed upon the refuse from breweries or sugar-refineries nor upon other fermentescible foods.
3. They should not be allowed to drink stagnant water.
4. They should not be allowed to get overheated or worried before being milked.
5. The pastures should be kept free from poisonous plants, and the stalls and sheds should be kept clean.
6. If the udders are dirty, they should be carefully washed before the milking.
7. The milk should be thoroughly cooled. The vessel containing it should be kept under a stream of running water or in iced water. The milk should be kept at a temperature of not more than 60° F.

8. At no season of the year should milk be kept very long, and none should be bought which has a higher temperature than 65° F.

9. When the milk is bought, it must be evident to the buyer that it is fresh and has been properly covered. There should be no communication between the room in which the milk is brought to cool and the stable in which it is produced.

10. The milk should be kept in vessels of tin or porcelain, which should be placed in boiling water after they have been used.

The particular ferment which is the cause of tyrotoxicon is either the bacillus butyricus, or one which closely resembles it. It is often developed in the stomach, and if that viscus, or the intestine, contains undigested food, the phenomena of putrefaction will result. Children frequently overcharge their stomachs with milk merely to quench their thirst. Indigestion may result from this, and then the development of tyrotoxicon may follow. It is a matter of common observation that the digestive function is not infrequently deranged after festivals and holidays. In the treatment of diarrhoea from tyrotoxicon, the further use of milk must be suspended for the time, to check, as far as possible, the multiplication of the germs. These germs are developed only in an acid medium, which indicates the use of antacid substances. The fact that the alvine evacuations may be alkaline does not prove that fermentation has not taken place, for the alkalinity may be caused by the alkaline serum of the blood which has been effused into the intestine. The value of subnitrate of bismuth in such cases is due to its germicidal properties, and the same is true of the salicylate of soda and calomel. The latter must be given, however, in small doses, and will usually be found very effective.

A. F. C.

Stadelmann: The Nature of the Fat-Crystals in the Fæces. (*Centr. f. Kinderh.* [abstracted], October 1, 1887.)

This work is especially interesting to those who pay special attention to the diseases of children, on account of the frequency with which fat-crystals are found in the evacuations of atrophic infants. The author's investigations showed that the so-called fat-crystals may be present in the fæces without the co-existence of icterus, and when the flow of the bile into the intestine is quite unobstructed. Extensive changes in the intestine, such as ulceration or infiltration of its wall, which interfere with the resorption of fats from its contents, may be held accountable for the fat-crystals, as well as imperfect changes in fats ingested in connection with obstructions to the



flow of the bile. The nature of these crystals was the subject of careful chemical investigation. They were arranged in the form of needles, clusters, and sheaves, their crystallographical peculiarities not being accurately definable, they were difficultly soluble in cold and hot water, in cold alcohol, and in ether, while in hot absolute alcohol they dissolved readily. Large numbers of these crystals are obtainable by filtration of the fæces with eighty-per-cent. alcohol. The residue may then be extracted with hot alcohol, while the addition of an excess of water will result in the formation of soaps. After this process has been frequently repeated one may obtain quite pure preparations of soap, the basis of which is sodium. Magnesium is found only in inappreciable quantities, and lime and potassium were not found at all. It was not possible to absolutely reduce the fatty acids to their components, but it seemed probable that the latter were oil acids and fatty acids of lower equivalences.

A. F. C.

Warlomont and Hugues: Recent Contributions to the Subject of Vaccinia. (*Arch. f. Kinderh.* [abstracted], Bd. ix. H. 1.)

The investigations recently made by the authors have not led to the desired results, but to negative ones. Though it was assumed as a positive fact that horses and cattle have vaccinia, and that horse-pox and cow-pox and variola have the same infective element as human variola, the experiments made yielded negative results. With horses sixteen experiments were made, lymph from children and cows being injected into various parts of their bodies. The results were negative, as also in twenty-four other experiments upon animals, fourteen of which were made by inoculation, six by injection into the veins, and four by injection into the cellular tissue. These experiments seemed to prove that the organism of the horse is unsuitable for the cultivation of vaccinia. The experiments were carefully made, and the authors' conclusions were as follows:

1. Neither horses nor cows nor any other kind of animals can be considered, in an accurate sense, as vaccination animals (*Impfthiere*), for every animal must be inoculated with vaccinia before it can develop it.

2. The original germ of vaccinia, with reference to horses and cattle, does not differ from that of variola. The latter is introduced into the animal's system, it becomes modified, and is finally developed as vaccinia.

3. The modification in horses is less decided than in cows, hence horse-pox is more like variola than is cow-pox.

4. Horses furnish a bad medium for the cultivation of vac-

cinia, but this should not induce one to repudiate animal vaccinia, for it simply means that this disease is propagated by weaker germs than the organism of the horse is in position to develop.

5. Artificial impregnation of horses with variola or vaccinia by means of inoculation or injection appears to be followed by no external phenomena, and the same is true of cows. Immunity must be obtained by such an inoculation, but as there is little or no reaction, the inoculation is apparently deprived of all significance as a means of control.

The results of nineteen experiments which the authors made upon cattle are summarized as follows:

1. The identity of horse-pox, cow-pox, and human variola has not yet been clearly demonstrated experimentally.

2. The organism of horses is poorly adapted to the cultivation of vaccinia.

3. Cattle can acquire immunity from vaccinia by inoculation, the veins and lymph-vessels being involved even when there are no external phenomena.

4. If inoculation is accomplished by means of subcutaneous injections into the cellular tissue, it will result in a swelling, which may be quite extensive; but it will not have the peculiarities of the swellings in vaccinia.

5. Immunity from vaccinia, which is acquired by introduction of vaccine, seems also to indicate immunity from the foot-and-mouth disease.

A. F. C.

Reimer: Experience among Russians in the Treatment of Smallpox. (*Arch. f. Kinderh.* [abstracted], Bd. ix. H. 1.)

The author's experience includes the treatment of thirteen hundred cases. When the pustules were covered with Weidenbaum's ointment (consisting of mercurial ointment, soap, and glycerin) they developed rapidly, but very painful irritation resulted, and the febrile process was not shortened. With a solution of india-rubber the children complained of great burning, and in four cases septicaemia resulted. Nitrate of silver applications seemed only to make the scars deeper. Hebra's iodine bandage caused great pain. The pustules became confluent in great scabs, which soon fell off, but the application had slight influence in respect to scarring. In forty-six cases applications of sublimate were made with great care. A mask was moistened with a solution of 1 to 500 and applied to the face four times daily for periods of ten minutes each. The development of the pustules was hastened thereby, but there was no perceptible influence upon the scarring process.

Schwimmer's paste of carbolized oil was found difficult of application upon a mask. A paste was then made from carbolic acid, talc, chalk, and starch, and applied four times daily in seventy-seven cases. The results were unfavorable. In thirteen cases there were symptoms of carbolic acid poisoning; in twenty-six there was nephritis, and in seven hæmaturia. Burkhardt and Zulzer's treatment with xylol was tried in fifty-two cases without any effect as to the scars. Other methods were equally unsuccessful. Salicylic acid was then tried in fifteen cases, as recommended by Schwimmer and Claridge, five grains being given every two hours, and in all the cases the duration of the disease was shortened. Microscopical examinations of the blood in the early stages of the disease showed that after six days' treatment with salicylic acid the rod-like bacteria which had previously been found had disappeared.

A. F. C.

Friedländer: Antipyrin in the Treatment of Scarlatina and Acute Bronchitis. (*Rev. Mens. des Mal. de l'Enf.* [abstracted], October, 1887.)

The author gives an account of fourteen cases of scarlatina in which this agent was used for children under six years of age. The average duration of the disease was between five and six weeks, and it did not appear that the duration was influenced by the drug. Neither did it exercise any perceptible influence upon the occurrence of complications, such as otitis media, nephritis, submaxillary and retro-maxillary abscess. In none of the cases, however, was there catarrhal trouble in the respiratory passages of any great intensity. The antipyrin was given in doses of sixty centigrammes, and was repeated one to three times in the course of the twenty-four hours, according to the age of the patient. It was administered in water, wine, or syrup of strawberries, and was readily taken. After the first dose there was usually perspiration and sleep for a couple of hours, the temperature then being about 38.5° C., the pulse 120, and the respiration slightly accelerated. The effect of the medicine lasted eight to twelve hours, and all the patients recovered.

In the treatment of acute bronchitis with this agent the results have also been very favorable, the duration of the disease being shortened from the usual period of two or three weeks to about eight days. In those cases in which there is decided elevation of temperature the drug was found especially useful, but, unless the temperature exceeded 39° C., it was not observed to have much effect.

Antipyrin acts more energetically in robust and well-nourished children than in those who are weak and delicate,



and the former also show less debility during the period of reaction from its effects. It was tried by the author in thirty cases of bronchitis in well-nourished children, in all of which the fever exceeded  $39^{\circ}$  C.; in none of the cases did the disease last longer than one week. Even in poorly nourished children the use of this remedy has reduced the mortality from acute bronchitis in the author's practice from fifty per cent. to ten per cent. or less. The dose should vary between sixty and ninety centigrammes for children from two to five years of age. Its action continues from twenty to twenty-four hours. It produces profuse perspiration, quiet sleep, easier respiration, and causes the cough to be less dry. In connection with the antipyrin the author is in the habit of using wine, tonics, laxatives, and caffeine.

A. F. C.

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II.—MEDICINE.

Jacobowitsch: The Tissue-Changes which take place in Ileo-Typhus Fever during Childhood. (*Arch. f. Kinderh.*, Bd. ix. H. 1.)

To investigate tissue-changes of all kinds which occur in a given disease in men or animals is a work which is too extensive to be carried out with thoroughness by a single investigator. Neither would it be altogether a profitable work. It is important, however, in studying a disease to know the quantity of nitrogenous material which is daily introduced into the system, also the quantity of urine and other evacuations discharged, and also the daily loss of carbonic acid and water. Though ileo-typhus in children is not a rare disease, the data in respect to the quantitative changes in the constituents of the urine are by no means complete. This subject has been investigated by the author for a series of years. The most important literature upon the subject of ileo-typhus is almost entirely contemporary, yet in all of it there is scarcely any definite information respecting the changes which occur in the urine. Analyses have been made by the author since 1883. But ten cases were followed with the greatest minuteness from the beginning to the end of the disease. The ages of the patients ranged from five and one-half to fourteen years. Half of them were boys and half girls. At the beginning of the disease and during the entire period of high fever the quantity of urine voided is diminished, though the diminution does not necessarily correspond to the elevation of the temperature. In the author's cases, at the end of the first week the diminution compared with the quantity passed in health had varied between fifty

and two hundred cubic centimetres in three of them, in three the quantity was one-third, and in four one-half as great as in health. At the end of the second week the diminution had been two hundred cubic centimetres in two cases, and in the others more than one-half. At the end of the third week the quantity passed in three of the cases was half as great as it had been the previous week, while in all the others the quantity was double that of the previous week. At the end of the fourth week the quantity was still less than normal. The color, in most cases, was regulated by the quantity, being dark red as the quantity diminished, though in some cases it (the color) was not far from normal. The reaction was sometimes slightly acid, at others decidedly so. As to specific gravity, the rule was that the greater the quantity the less was the density. In none of the cases was there albumen at any time, though Gerhardt has said that it is usual to find it as a consequence of the change in blood-pressure, produced by the febrile process. As to urea, the author divides his cases into two groups, one of them including those in which the quantity was large from the first week of the disease but gradually diminished until the end; the other including those in which the quantity was at first small but gradually increased until the end of the disease. As to uric acid, the quantity depended upon the elevation of the temperature, being much greater during the high temperature of the first period than during the later stages of the disease. During the entire course of the disease the quantity of the chlorides was much diminished. The cases were also divisible into two distinct classes with respect to the phosphates and sulphates, in one of them the quantity being great at the beginning and gradually lessening until the end, in the other the reverse being the case.

The conclusion from these investigations was, therefore, that in this disease the intensity of the febrile condition and the elevation of temperature did not affect, as to quantity, the urine voided so much as did the intensity of the poison of the disease circulating in the blood. It would be desirable to compare these results and statistics (as tabulated in the paper) with similar statistics from the investigation of other forms of typhus poisons, that thus we might gradually arrive at a rational plan of treatment.

A. F. C.

Lauro: *Rachitis in the Fœtus.* (*Archivio di Patol. Inf.* [abstracted], September, 1887.)

The author's paper was presented to the Italian Obstetrical and Gynæcological Society at Naples, April 9, 1887, its conclusions being the following:

1. The changes to which the skeleton is susceptible during intra-uterine life may have different origins, rachitic anomalies not being present in all cases, as is seen in the so-called micromelic rachitis.

2. Rachitis of intra-uterine life may be spoken of as a confirmed fact, established by the anatomical and anatomopathological lesions of the bones in new-born children.

3. Most of the cases which are described as micromelic rachitis are to be considered as cases of true rachitis, which is quite a different condition from the former.

4. Micromelic rachitis consists in a diminution in the size of the bones, which is produced either by the interposition of periosteum between the epiphyseal cartilages and the diaphysis or by defective cartilage formation.

5. The changes in intra-uterine life which are due to rachitis are similar, and have the same origin as those which are encountered in extra-uterine life.

6. It does not appear to be necessary and indispensable in intra-uterine rachitis that the bones should be quite formed to enable this disease to invade the foetal skeleton, which is not a completely ossified structure.

7. Absence or irregular deposition of calcareous matter, while it resembles true rachitis, and is considered as such by some, does not satisfy the present knowledge upon this subject, nor explain all the facts observed in connection with it.

8. The lesions which are met with in the skeletons of these foetuses cannot be attributed to lesions of nervous centres and consecutive muscular contraction, notwithstanding the fact that there may be some associated defect of the bones (club-foot, for example) to which such an origin is attributed.

9. Moral emotions of the mother and the exertions of the imagination can have no influence with reference to the vices of conformation which are under discussion. Such ideas are attributable only to credulity and superstition.

10. Most of the observations which have been made tend to show that the physical condition of the mother is a fact entirely extraneous to the development of this disease, and yet the author's opinion is that the existence of rachitis in a woman is a predisposing cause of its development in her offspring, this opinion being based upon observation and reflection.

11. Cases of intra-uterine rachitis in connection with mothers of faulty conformation would be more numerous if all the children of rachitic mothers, especially of those who live amid bad hygienic and dietetic surroundings, were examined with reference to the state of their bones; and those cases which have been looked upon as not influenced by the mother's con-



dition would be described as true rachitis if those maternal conditions, practical rather than theoretical, which explain the essence and the genesis of the disease were sufficiently considered.

12. The lesions of continuity which are sometimes found upon the bones of rachitic new-born infants should be regarded as evidences of fractures which have occurred in consequence of the great friability of the bony tissues in the course of their calcification, or in consequence of the insufficient admixture of calcareous salts.

13. These fractures may vary in number and may occur in all the long bones, and occasionally in the flat and short ones. They may be complete, incomplete, and even longitudinal. At the time of birth they may be consolidated, in process of consolidation, or united by pseudo-arthritis, with or without evidences of crepitus.

14. Those cases which have heretofore been described as cases of annular rachitis have probably been due to fractures in which there has been consolidation by periosteal callus either wholly or in part, the callus appearing as a circular enlargement of the bone.

15. In the severer forms of intra-uterine rachitis, not only are changes found which cause deformities of the limbs, but also others of a more serious character, some of which may so deform the thorax that respiration will be interfered with, and others which leave the cranium incomplete and render the fœtus incompetent to perform the functions of extra-uterine life.

A. F. C.

**Machon:** Dilatation of the Stomach in Children. (*Centr. f. Kinderh.* [abstracted], October 1, 1887.)

This subject was extensively treated by Demme in 1881, and the author's observations have been made since that time. The anatomy of the child's stomach shows a relatively defective development of the fundus, great diameter of the cardiac orifice, and deep position within the abdominal cavity. These facts have an important bearing upon the capacity of the organ, and the influence which is exercised by the condition of fullness and by the extension of its wall. Its histological structure also shows only slight development of the muscular coat, especially of the valve-like muscle of the pylorus. Upon the mucous membrane there is also a greater development of the mucous than of the peptic glands. In the new-born infant the stomach is fixed only at its two extremities, the cardiac end being at the level of the tenth costal cartilage, and the pylorus not extending beyond the middle line of the body. When the

organ is full the pylorus is its lowest point, and is always covered by liver-tissue; the upper half of the lesser curvature runs parallel with the left side of the vertebral column, and its lower portion lies transversely across its anterior aspect. The angle which is thus formed varies greatly with the different movements of the organ. Dilatation of the stomach may be acute or chronic, and the chronic process may involve the whole or only a portion of the organ. There may also be a functional and an organic dilatation, and one which is due to primary disease of its wall. Among the functional dilatations the most important is that which is based upon disturbance of the nervous system. This may be a lesion of the central nervous system, for example, tuberculous meningitis, or hypertrophy of the brain; or, the nerves of the stomach itself may be at fault. It may also occur in connection with chlorosis, the cachexias, or relaxation of the muscular structure in consequence of chronic catarrh. Secondary dilatation of the stomach of the organic variety rarely occurs. Narrowing of the pylorus is always the causative factor, and to this may be added a congenital weakness of the muscular structure of the organ. Imperfect development of the muscular coat and insufficient nutrition in the first months of life are also causative elements which occasionally exist. Cases are also recorded by Demme which were caused by keeping the child in bed too much of the time, and by rachitis, this disease being one which predisposes to disorders of the digestive tract.

The symptoms of dilatation of the stomach in children are partly local and partly general, and are similar to those which are observed in adults. The diagnosis can be readily made by inspection of the abdomen, by palpation, or by examination with a sound. Diagnosis by percussion is not always reliable.

Functional dilatation, which is caused by nerve-disorders, usually disappears with the primary cause. The prognosis in primary organic dilatation also depends upon the success with which the fundamental disturbance is treated. Prophylaxis should be the primary consideration in the therapeutics of this condition. When the condition is present stomachics are indicated, or the use of the gastric sound, as recommended by Epstein. The electric current and cold applications are indicated only in the functional form of the condition. General treatment must also receive careful attention.

A. F. C.

Mavrikos: Erysipelas in the New-Born Infant. (*Le Concours Méd.*, October, 1887.)

Though this disease is of rare occurrence among the newly-born, it is sufficiently important and interesting to have formed

the basis for the author's thesis (Paris, 1887). It is usually developed in the dwellings of the poor, amid unhealthy surroundings, especially among dirty and poorly nourished infants. That portion of the surface which is usually the seat of infection is the umbilical scar, bathed as it often is with purulent matter. It may also begin upon the genital organs, the thighs, or the folds of the groins, as the result of a want of care or cleanliness. It may originate from pustules of vaccinia or of ecthyma, or from eruptions such as that which obtains in eczema of the scalp. The disease begins insidiously, being characterized only by the local symptoms of bright redness of the skin, hardness of the cellular tissue, absence of a peripheral swelling or border, and tendency to suppuration and gangrene. As the local symptoms are evolved the general condition becomes impaired, and great restlessness and digestive troubles become apparent. There are few variations in the temperature. The progress of the disease is usually acute, and it is rarely terminated by recovery. Death usually occurs in collapse, and may be hastened by such complications as pleurisy, meningitis, peritonitis, phlebitis of the umbilical vein, icterus, etc.

According to Trousseau, the disease is almost invariably fatal in infants under fifteen days of age. The differential diagnosis from eczema rubrum, urticaria, and simple erythema is not difficult. The absence of discoloration of the skin in sclerema distinguishes it from erysipelas. Prophylactic treatment is all-important, and will consist in good care and general hygienic precautions. All tendency to erythema should be counteracted, and care should be taken to prevent abrasions of the skin, which would afford a means of entrance for the infective element. Neither iodoform nor carbolic acid should be used in dressing the stump of the umbilical cord, a concentrated watery solution of boric acid, frequently renewed, being all that is required. Under this method of treatment erysipelas in the newly-born will become more and more rare. If the disease has occurred, prophylaxis not having been instituted, it is recommended that the diseased areas be covered with soft linen, frequently moistened in a warm four-per-cent. solution of boric acid, over which may be laid gauze anointed with vaseline. Or the surfaces may be anointed with borated vaseline and then covered with cotton-wool. The general treatment should be tonic in character. Five or six drops of tincture of aconite-root may be given in the course of twenty-four hours, or small quantities of the tincture of valerian, extract of quinquina, or sulphate of quinine. Small quantities of alcoholic liquors, whether wine, brandy, or cordial, may also be given



with advantage. That which is of greatest importance is that the child should have a sufficiency of breast-milk, as this will be the principal factor in enabling the child to withstand the force of the disease.

A. F. C.

**Oxley: Tuberculous Meningitis.** (*Jour. de Méd.* [abstracted], October 16, 1887.)

The author's conclusions are the following:

1. Tuberculous meningitis is not a disease *per se*, but since the effusion into the ventricles, if abundant, causes a fatal result, this phase of tuberculosis deserves close study.

2. The effusion into the ventricles is the consequence of occlusion of the vessels by the development of tuberculous nodules in their walls.

3. The disease seldom occurs after the tenth year.

4. Prophylaxis is all-important. Every change in the condition of a child should be noted, and the state of the pulse and temperature should be carefully watched.

5. Tuberculous meningitis is not caused by over-exertion of the brain. Confinement in a poorly-ventilated room, or overuse of the brain, may lead to nervous exhaustion, and the result of this, in a child with phthisical tendency, may be tuberculosis, but not necessarily a fatal tuberculous meningitis. As many children under the age of ten years, who are also too young to go to school, die from this disease as die from the numbers of those attending school.

The microscopical investigation of these cases shows that in the tuberculous conditions of the brain the point of departure for the accomplishment of infection is a cheesy mass, the infectious matter being probably carried by the vessels.

A. F. C.

**Jessner: The Nature of Scarlatinal Diphtheria.** (*Rev. Mens. des Mal. de l'Enf.* [abstracted], October, 1887.)

Writers who believe that scarlatinal diphtheria should be considered as distinct from true diphtheria base their opinions upon the facts that in scarlatinal diphtheria the false membranes are less dense, that they do not descend into the larynx, and that they are never followed by paralysis. These statements do not accord with the author's recent experience during an extensive epidemic of scarlatina, in which forty-five per cent. of the cases were characterized by the presence of confluent false membranes at the level of the tonsils. In this experience the false membranes varied in thickness just as they do in diphtheria. The process rarely extends to the larynx, it is true (in scarlatinal diphtheria), but in one of his

cases it did so, quite covering the organ. The reason why the larynx is not usually involved in scarlatinal diphtheria is because the false membrane is propagated by preference, as it were, upon those tissues which were previously the seat of the scarlatinal process; that is, upon the cavity of the pharynx, the Eustachian tubes, etc. In nasal diphtheria the pharynx frequently is not involved. The foregoing facts explain the infrequency of paralysis in consequence of scarlatinal diphtheria. The muscles and nerves which were infected by the scarlatinal poison resist that of diphtheria. A case is related which demonstrates that the morbid process is identical in true and in scarlatinal diphtheria. It occurred during an epidemic of scarlatina, several of the children in a certain family being attacked with scarlatinal diphtheria. Two of the others, however, were attacked with true diphtheria complicated with paralysis.

A. F. C.

Heubner: Contribution to the Subject of Diphtheria. (*Rev. Mens. des Mal. de l'Enf.* [abstracted], October, 1887.)

By means of collective investigation the author was enabled to gather a table of eleven hundred and forty-one cases of diphtheria which occurred in and around Leipzig between November, 1884, and the end of December, 1885. The analysis of these cases brought out a number of important considerations.

1. Children between the age of three and seven years are especially predisposed to diphtheria. The predisposition is not marked after the seventh and before the second years. The disease occurs more frequently among nursing infants than among those who have passed the age of puberty. The chances of contracting the disease are thirty times greater for a child between the ages of three and six years than for a person between the ages of thirty and forty.

2. The mortality diminishes as the age increases. In these statistics the mortality was :

	Per cent.
Between the ages of one and twelve months . . .	38
During the second and third years . . . . .	35.3
Between the eighth and fifteenth years . . . . .	7.2
Between the fifteenth and twentieth years . . . . .	2.6

Females are somewhat more susceptible to the disease, but this may be due to their more frequent contact with the sick. The mortality is greater among males, these remarks applying more particularly to adults. The deaths among women between the ages of sixteen and twenty years were fifteen per cent., among men for the same period eighteen per cent.

3. The local distribution of the disease in Leipzig showed that it thrived best in the midst of great collections of individuals. It was very prevalent in those parts on the outskirts of the city which were inhabited by the laboring classes, and in houses which had been recently constructed.

4. It has long been known that the diphtheritic poison may remain latent for a long time in certain *media* without losing its virulence. When several cases of diphtheria break out in a house the question naturally arises whether this is not a favorable medium for the conservation and development of the poison, or whether the conditions of life and hygiene of the inhabitants of the dwelling have not provoked among them a particular morbid receptivity. These conditions seem to have been fulfilled in certain newly-constructed houses, which furnished cases for these statistics.

5. Diphtheria is more likely to occur and more likely to be fatal in cold than in warm weather. In the given statistics the greatest number of cases occurred about the end of December, and the fewest in July. It is not to be inferred from this, however, that the extension and the intensity of an epidemic take a parallel course.

6. With reference to the influence of the schools upon the propagation of diphtheria, the author has frequently been able to demonstrate that direct contagion is the principal factor in the dissemination of the disease. In many cases he has been convinced of the danger which attends the presence of apparently the most benign lesions. It also appears to be established that diphtheria may be propagated by means of persons in whom the disease is not well developed.

A. F. C.

Walsham: Aneurism of the Internal Plantar Artery following Division of the Plantar Fascia for Club-Foot. Cure by Pressure. (*Lancet*, January 28, 1888.)

This rare accident occurred in the case of a boy of seven. The plantar fascia was divided in both feet; the puncture was made rather far back in the sole. In the left foot quite a smart hemorrhage followed the puncture. This was controlled by pressure and plaster-of-Paris dressings applied. When these were removed, two weeks later, the wound was soundly healed, but an aneurismal tumor was present as large as a marble. Cure took place by pressure, which was maintained over the posterior tibial artery altogether for about two months. The writer is cognizant of no other similar case, and attributes the aneurism to the fact that the mother allowed the boy to walk before the parts were consolidated. He is of the opinion that a wound of the artery is not an uncommon accident.



Richardson: Some Facts in the Clinical History of Scarlet Fever. (*London Med. Record* [*Asclepiad*], October, 1887.)

The statement of the rarity of the disease under two years is denied, since of over twelve thousand cases under five, over four thousand were under two years. The most common age is the third and fourth years. There is no difference in the susceptibility of the different sexes. It is most common in autumn, next in summer, next in winter, and least in spring. Cases in the spring are also less severe as a rule. Although second attacks are rare, the writer has himself had the disease three times.

*Mortality* is always greater in towns. The poison is received most probably through the lungs, and may take effect in a few hours. According to the author's view the symptoms are caused, not by the propagation of vital germs but by the development of a chemical body, which by its presence gives rise to the symptoms, and by its ultimate elimination frees the system from them all except those which are secondary.

Dr. Richardson believes that organic chemistry will some day be able to prove that the organic poisons by which the various diseases of epidemic types are propagated can be produced in the laboratory by synthetical processes of research upon the human blood. Regarding *treatment*, the main thing is to insure free diaphoresis, and to prevent the coagulation of the blood in the right heart by means of the free use of ammonia, especially in severe cases.

Locally the use of peroxide of hydrogen is highly spoken of.

Barlow: Acute Enlargement of the Thyroid Gland in a Child. (*Brit. Med. Journ.*, December 17, 1887.)

The affection was observed in a boy of three years, just as he was recovering from erythema nodosum. The swelling involved the whole gland, but the left lobe most decidedly. There was also pain, tenderness, dysphagia, and pyrexia, which reached 103°. The acute symptoms lasted four days, but the swelling persisted for a fortnight. Marked anæmia followed the disease. The possibility of rheumatic origin was suggested by the preceding erythema nodosum, but on the whole the reporter was induced to place the case in Lucke's class of idiopathic cases, and to emphasize its association with exposure to cold and nasal catarrh in an anæmic subject.

Dr. Stephen Mackenzie referred to a case of acute swelling of the thyroid which proved fatal from pressure in a day, the patient being much debilitated at the time of the attack.

Mr. Berry said that the sudden enlargements usually oc-

curred about the time of puberty. In twenty-seven fatal cases, ten were between thirteen and sixteen years old. He referred to the association of the disease with rheumatism in cases published by some French author.

**Sturges: Chorea in a Child under Three.** (*Lancet*, January 21, 1888.)

The family history was rheumatic, but not neurotic. Three months before admission the child had a fall on the back of the head; following this she had been nervous, getting weak on her legs, until she was finally unable to walk; nor could she use her hands well enough, to feed herself.

General choreic movements were marked on admission, and the child was exceedingly emotional. The heart was enlarged, and an apex systolic murmur was heard.

The progress of the case was steadily towards recovery, although the heart-lesion persisted.

The paper contains some further remarks upon chorea in general, and makes the statement that the intimate association of chorea with rheumatism refers only to early childhood.

**Harris: Congenital Heart-Disease with Cyanosis.** (*Brit. Med. Journ.*, December 24, 1887.)

The child died at seven weeks, and had had cyanosis since birth. The cause of death seemed to be a gradually increasing asphyxia. The change was found to be transposition of the pulmonary artery and aorta, the latter coming off from the right and the former from the left ventricle. The foramen ovale and ductus arteriosus were slightly patent, and this was the only means by which the blood-currents could mix.

The right ventricle was markedly hypertrophied, the wall being thicker than the left.

From the arch of the aorta the right carotid and subclavian came off separately, then the same vessels on the left side, and beyond these the opening of the ductus arteriosus.

The condition of the pulmonary orifice is not stated.

**Anophthalmos and Microphthalmos.** (*Brit. Med. Journ.*, December 24, 1887.)

At a meeting of the Royal Academy of Ireland, Dr. Neary read a report of a case of bilateral anophthalmos, and exhibited a child six weeks old with this anomaly.

The orbits and eyelids were well formed, but nothing resembling an eyeball could be detected in either orbit.

At the same meeting Dr. Fitzgerald communicated a case of congenital microphthalmos, and showed the patient. There

were two undeveloped globes with cornea and iris, but little or no anterior chamber; illumination of the fundus was impossible. After considerable experimentation the physician was unable to convince himself that the child had any sight. The mother gave a history of a fright during pregnancy, but he did not know at what period.

**Cordier : An Epidemic of Infantile Atrophic Paralysis.**  
(*Gaz. Méd. de Paris*, January 14, 1888.)

This author saw thirteen cases of this disease during the months of June and July, 1885, in a community numbering not more than fifteen hundred inhabitants. The age of the patients varied from one to thirty months. Almost all of them were in good health previous to their attack by this disease, to which four succumbed on the third day. Those who survived showed definite and characteristic lesions of the disease. The symptoms were quite similar in all cases, and consisted of fever of greater or less intensity, the intensity being apparently governed by the gravity of the disease or the extent of the medullary lesions; convulsions in about half of the cases; profuse sweating, which was absent only in the four fatal cases; paralysis, which was seen in several cases after the second or third day, and which involved all the muscles of the neck, trunk, and limbs in some, the lower or the upper limbs, or only a single limb, in others. Other symptoms were improvement and gradual disappearance of the paralysis, which finally remained fixed in a single muscle or group of muscles, while in other cases atrophy and deformities remained. These thirteen cases occurred within narrow limits as to time, place, and population; it cannot be believed, therefore, that they were simply coincident. The author's opinion is that they constituted an epidemic identical with epidemics of those diseases the infectious character of which is well recognized. In regard to the infective agent in this disease, it is believed that it did not enter the organism with the food or drink, nor by inoculation, but with the air that was inspired. The propagation of the disease was traced from one patient to another, according to the dates of invasion and the relations which were sustained between the different families which suffered. The contagious character of the disease was demonstrated by the fact that one child was attacked thirty-six hours after a visit to another child who was already suffering from the disease. In two other cases a boy and his sister were exposed, and the first evidences of the disease were apparent only eight or ten hours afterwards. A criticism of the foregoing facts would be that the period of incubation was so



short that it would seem hardly proper to consider the disease contagious upon such a ground. Hence it may be considered premature to draw conclusions as to the etiology and nature of this form of infantile paralysis, and as to its nosological position.

A. F. C.

Trousseau: The Ocular Complications of Measles and their Treatment. (*Jour. de Méd.*, November 27, 1887.)

Of all the eruptive fevers there is none, not even variola excepted, which so frequently is accompanied by complications affecting the eyes. At the time of invasion of the disease the conjunctiva alone is attacked, in common with other mucous membranes. In some cases the membrane is red and the tears are abundant; in others there is a secretion of pus or muco-pus. The lids and the cornea are rarely affected during this stage. During the course of the disease the conjunctivitis may continue and the purulent inflammation increase in intensity. The lids may also become red, swollen, and tense, and the corneæ may undergo serious changes. The author does not believe that purulent conjunctivitis, with which gonococci are associated, is under the direct dependence of measles. Children who are victims of that form of conjunctivitis are almost always in hospitals, and have been exposed to contagion. Phlyctenular conjunctivitis also occurs in some cases during this period. The lids may develop erythematous blepharitis, the palpebral borders being red and irritated. The corneæ may be the seat of phlyctenæ, superficial infiltration, abscess, or ulceration. It is during convalescence that the ocular complications of measles attain their maximum of frequency and intensity. The conjunctivitis at that period may be of either of the forms which have been mentioned, but the one which is of most frequent occurrence is the phlyctenular, characterized by isolated or confluent, large or miliary phlyctenæ upon the bulbar conjunctiva, at the corneal limbus, or even upon the cornea. In a word, it is believed that phlyctenular conjunctivitis is the most frequent complication of measles, and that measles is one of the most frequent causes of phlyctenular conjunctivitis. There may be, as a complication, diphtheritic conjunctivitis with scanty secretion of pus and a gray, lardaceous, ecchymotic mucous membrane, and this without the existence of any other evidence of diphtheria. Necrosis of the cornea is almost certain to be the result. Diphtheritic conjunctivitis must not be confused with the pseudo-membranous conjunctivitis which may complicate measles, and in which the exudate is superficial and easily removed. The lids may be affected

with erythematous blepharitis, as has already been stated, or with eczematous blepharitis of a rebellious character. The lachrymal apparatus may either be excited to excessive secretion or to dacryocystitis. The cornea may be superficially inflamed at first, or there may be an ulcer and abscess without precedent phlyctenæ. In every case in which photophobia is decided the lids should be opened and the corneæ examined. Such a procedure may mean the avoidance of irremediable accidents. Tuberculous conditions of the eyes have also been reported in connection with measles. Even after a child has entirely recovered from measles recurrence of these various forms of ocular trouble is possible, and in addition there may be as sequelæ strabismus, asthenopia, and refractive disorders. These complications are most liable to occur in children who are badly nourished and of the scrofulous diathesis. Catarrhal or purulent conjunctivitis should be treated by means of cold compresses, frequently renewed and moistened in a four-per-cent. solution of boric acid or a one-per-cent. solution of carbolic acid. In purulent conjunctivitis a two-per-cent. solution of nitrate of silver should be applied every twelve or twenty-four hours to the conjunctival aspect of the lids. For diphtheritic conjunctivitis lotions of a 1 to 2000 solution of sublimate should be used, and occasional applications of lemon-juice should be made. In phlyctenular conjunctivitis warm borated lotions should be used, and once daily a small portion of ointment composed of

Vaseline, 10 grammes ;  
Hydr. ox. flav., .50 gramme ;

should be placed between the lids. For blepharitis compresses, hot borated solutions, or cataplasms are indicated, and at bedtime the border of the lids should be anointed with a portion of

Vaseline, 5 grammes ;  
Lanoline, 5 grammes ;  
Zinci ox., .50 gramme.

Phlyctenular keratitis should be treated in the same way as phlyctenular conjunctivitis. Superficial keratitis should be treated with hot compresses moistened with boric acid solution, and instillation three or four times daily with a mixture of

Water, 10 grammes ;  
Salicylate of eserine, .05 gramme.

If there is hypopion, the cornea should be punctured and eserine instilled. If the cornea is perforated, eserine should

be used, and also a compression bandage. In all cases it must not be forgotten to build up the general condition by suitable tonic treatment.

A. F. C.

Morot: A New Pathogenic Conception of Croup and Diphtheritic Angina. (*Le Concours Méd.*, November 5, 1887.)

The author's belief is that croup and diphtheritic angina are manifestations of the uric-acid diathesis, under the form of pharyngo-laryngeal congestion, which are favorable to the production of false membrane. This false membrane finds in the congested tissues a series of conditions which are suitable to its germination and propagation. As proofs of this theory the author cites the congestion of the liver, spleen, and kidneys, which coexists with diphtheria, and he has been able to show each day, in cases observed at Vichy, a correlation between the congestion of the liver, spleen, and kidneys, and the pharyngo-laryngeal congestion, which is manifested in the form of coryza, pharyngitis, and laryngitis. The congestion of the viscera in question is due to a predisposition on the part of the patients to arthritic troubles, and this is encouraged by bad hygienic arrangements, especially as they affect the alimentary canal. The chronic congestion of the liver interferes with hæmotosis by the consequent overcharging of the right lung, and the blood is thus vitiated by an excess of uric acid, which the congested kidneys no longer eliminate. Then the vitality is enfeebled, and the child becomes an easy prey to the microbes which attack the respiratory apparatus, because the pharyngo-laryngeal congestion has prepared the soil for them. To the objection which might be offered that many children in perfect health are attacked by diphtheria, the reply is made that this apparent health is fallacious, and that a careful examination would show that this is the case. The treatment which is proposed by the author, in view of his extraordinary theory of pathogenesis, is as follows: Local treatment, the removal of the false membrane is a matter of secondary consideration, the principal end should be to relieve the liver and spleen of their congestion, and by *contre coup* the pharynx and larynx. This end is to be obtained by using cauterization upon the hepatic area every hour or two by means of the monohydrated nitric acid, or if this cannot be obtained, by using small blisters over the same area. The formation of false membrane upon the blistered surfaces need not excite apprehension in his opinion. For internal medication he recommends the use of the sulphate of quinine for relieving the congestion of the spleen, and strychnia for reliev-



ing the congestion of the liver and counteracting the atony of the vessels. Alcohol should not be used, as it tends to increase the hepatic congestion.

Concerning the application of blisters to children with diphtheria the author will find strong opponents. By some it is regarded as always imprudent and even culpable.

A. F. C.

Sonnenberger: The Pathogenesis and Treatment of Whooping-Cough, together with the Consideration of a New Method of Treatment. (*Centr. f. Kinderh.* [abstracted], October 29, 1887.)

Recent authors regard whooping-cough as a disease which is due to a fungus; that is, as an infectious catarrhal disease of the respiratory mucous membrane, a broncho-mycosis. This is in distinction from those who regard it as a local catarrh of certain portions of the respiratory mucous membrane, especially of the mucous membrane covering the arytenoid cartilages, and the cartilages of Santorini and Wrisberg. The nerve-endings in this area being irritated,—that is, the branches of the superior laryngeal nerve,—paroxysms of coughing are excited in a reflex manner. A third view is that the nasal mucous membrane is the seat of the disease, which is consequently a reflex neurosis of the nose, and that it is caused by the irritation of a parasite. In the treatment of this disease three factors are to be considered: (1) the infection *per se*; (2) the catarrh of the respiratory mucous membrane; (3) the increased excitability of the nervous system, especially of the vagus, and the superior laryngeal nerve.

After considering the various means of treatment which have hitherto been resorted to in the treatment of this disease, the author concludes that the local treatment in children is attended with great difficulties and cannot readily be carried out, therefore it has not shown any results that were very good. Among the internal remedies quinine has given the best results, and therefore it has been in general use for a long time. Objections to it are its bitterness, its tendency to excite vomiting and disturbance of digestion, its incomplete solubility and inaptitude for use in subcutaneous injections or in rectal enemata. Antipyrin has been used by the author in about seventy cases; the dose ranging from one centigramme in very young children to one gramme in adults, three times daily, with possibly a fourth at night. In some cases double this quantity has been given without disadvantage. It was given in water with suitable flavoring, and in not a few cases resulted in an improved appetite and nutrition. The best results were

obtained in those cases in which it was given from the very beginning of the disease, and under favorable hygienic surroundings. Its effect in all cases was, however, beneficial. To particularize, in those cases in which it was given from the first stage of the disease the duration was from three to five weeks, the course was a mild one, and the number of paroxysms six or seven in the twenty-four hours. When given in the later stages of the disease it seemed to lessen the violence of the paroxysms at once, diminish their frequency after a few days, and facilitate expectoration. The nutrition improved, and collapse was never seen. In all cases the effort was made to improve the hygienic surroundings as much as possible.

A. F. C.

### III.—SURGERY.

Bernard Pitts: The Treatment of Psoas Abscess by Lumbar Incision. (*Lancet*, December 24, 1887.)

Two cases thus treated were shown at the meeting of the Medical Society of London.

The first case, in a child, dependent upon caries of the lumbar vertebræ, was kept in bed eight months after incision. In the mean time a deformity, quite well marked, had developed. Six months later there was a sinus with a small discharge, although the patient was up and wearing a poro-plastic jacket.

The other patient, an adult, had a large abscess apparently not dependent upon bone-disease. A large lumbar incision was made and a small counter-opening in the groin. All was soundly healed in two months. Antiseptic methods were used in both cases.

The advantage claimed for the lumbar incision was that it enabled the surgeon to explore the lumbar vertebræ.

The writer would never open a psoas abscess unless he could obtain a lumbar drain. Syringing was regarded as unnecessary unless the pus was offensive or curdy.

Mr. Owen considered rest in bed better treatment than supports for angular curvature.

[The views quoted above from the last speaker would seem to us on this side of the Atlantic to have come from the last generation. We believe that the unanimous voice of the surgeons of this country is against such teaching and that every day's experience proves it fallacious.—REP.]

Gonzalez Alvarez: Intubation of the Larynx. (*El Prog. Ginecol.* [abstracted], September 10, 1887.)

The author has recently made use of the method of O'Dwyer,

and has been very favorably impressed with its efficacy. The case in which trial was made was that of a girl three and a half years of age, who suffered with pharyngo-laryngeal diphtheria. Local applications had been used ineffectually for some time, and when the symptoms became urgent a number three O'Dwyer tube was introduced. The symptoms were ameliorated for three days, at the end of which period the child succumbed to the virulence of the infection.

The author gives a description of the different varieties of tubes which are in use, and contrasts the features of intubation with those of tracheotomy, to the disadvantage of the latter. The conclusions of his paper are :

1. When asphyxia is imminent from obstruction in the larynx or trachea, the means for avoiding it are to be found either in tracheotomy or intubation. One or the other of these operations should be practised when diphtheritic inflammation of the upper air-passages is compromising the patient's life.

2. Should dyspnoea depend upon obstruction in the bronchial tubes, no advantage will be derived from either tracheotomy or intubation. Neither of the operations will prevent the extension of the diphtheritic inflammation in the lower air-passages.

3. Laryngeal intubation and tracheotomy are about equally efficacious.

4. Laryngeal intubation is to be preferred, because it does not compromise the patient's life, as an operation ; because it does not give pain ; because it can be performed without danger to life ; because it does not require the subsequent constant attention of a trained assistant, and because convalescence after its use is more rapid than after tracheotomy.

5. The operation is simple and easily performed. Without doubt it can be more readily performed by one who has manual dexterity, and after suitable practice upon the cadaver or some artificial apparatus.

A. F. C.

Clement Lucas : Congenital Absence of the Upper Lateral Incisor Tooth as a Forerunner of Harelip and Cleft Palate. (*Brit. Med. Jour.*, December 3, 1887.)

Excluding cases where the tooth had been lost, the writer had collected three where it was wanting. The first was a man whose daughter presented a similar deformity upon the same side.

The second was a woman with absence of the right upper lateral incisor, whose fifth child had right harelip.

The third, a woman with absence of the tooth upon the left side, whose first child had left harelip and cleft palate.



Owen: Conservative Surgery of the Knee-Joint involved in Acute Suppuration secondary to Disease of the Tibia. (*Lancet*, December 24, 1887.)

The first case was in a boy of seven, acute suppuration developing as a complication of ostitis in the head of the tibia of some months' standing. The temperature was high and constitutional symptoms severe. The joint was laid freely open by an incision dividing the ligamentum patellæ. A perforation of the tibia was disclosed. The joint was drained through the tibia, which was gouged out, and through the popliteal space. The wounds all healed, and the boy was walking about with a crutch and a Thomas splint. The limb was not straight, however.

The second case, in a girl nine years old, was one of acute periostitis of the tibia with subperiosteal abscess, pyæmic abscesses in the ankle and elbow. Free incision and drainage gave relief, but a month later acute suppuration involved the knee-joint by extension from the tibia. The joint was laid open, as in the former case, and the child made a good recovery, and, like the other patient, was going about with a Thomas splint and high shoe.

In commenting upon the above cases, Mr. Owen remarks that it is stating the case mildly to say that amputation has been done many times for a far less serious condition. The successful result is ascribed to the prompt laying open of the joint and the efficient drainage.

Foreign Bodies in the Left Bronchus. The First Case is reported by Hawkes. (*Lancet*, December 24, 1887.)

A child, twenty-three months old, was admitted to the hospital with signs of obstruction of the left bronchus and collapse of that lung. Six days before, while eating rabbit, he choked, and the mother dislodged a piece of bone from the back of the mouth, relieving the asphyxia. A short cough remained. Tracheotomy was done on admission, but efforts to remove the foreign body failed. Death occurred four days later.

The autopsy showed one of the caudal vertebræ of the rabbit in the bronchus leading to the upper lobe of the left lung. The lung was collapsed and in a condition resembling croupous pneumonia.

In the *Lancet* of January 14 Cheadle and Smith reported the case of a girl of nine, from whom a metal pencil-cap was successfully removed from the left bronchus after tracheotomy. Urgent choking followed the introduction, but this was relieved by the passage of an œsophageal probang, and it was thought the body had reached the stomach. Four days later

dulness and imperfect entry of air on the left side of the chest were first noted. Eleven days after the accident the whole left lung was dull, and respiratory murmur was absent except over a small area in front, at the apex. The stomach was drawn upwards and the chest-wall greatly retracted on that side. There had as yet been no rise of temperature. The trachea was opened low down, and the cap, which had the open end upwards, extracted without difficulty by forceps. In fourteen days almost complete expansion of the lung had taken place, and the patient made a good recovery.

The entrance of foreign bodies into the left bronchus in preference to the right is stated not to be so rare as generally supposed. Of thirty-three cases collected, the left bronchus was the seat in eighteen cases and the right in thirteen. The absence of pulmonary inflammation in the case is opposed to the view that collapse is a leading factor in producing catarrhal pneumonia.

**Redard:** *The Treatment of Erectile Tumors by Means of Electrolysis.* (*Archiv. di Patol. Inf.*, January, 1888.)

After having experimented with different methods which are advocated for the treatment of erectile and cirroid tumors, the author concludes that electrolysis presents advantages over all the others. The objections which have been alleged against the use of electricity for purposes of this kind are the imperfections or the expense of the electrical apparatus, the long and painful treatment which is necessitated, the scars, cicatrices, and prolonged suppuration which attend it. These objections are due to faulty instruments and improper modes of application, and if corrected electrolysis will furnish a rapid cure, without inconvenience. The method of treatment is one which is easily acquired. Thirty cases of sessile tumors have been treated by the author by this method with satisfactory result, the situation in most cases being upon the lips and face. The apparatus should consist of a good galvanic battery, a well-graduated galvanometer, and gold or platinum needles half a millimetre in diameter and eight or ten centimetres in length. The patient should be perfectly immobile during the passage of the current, which lasts but a few minutes, and is not very painful. An anæsthetic is not usually required. Regarding the use of one or two needles in the tumor, most authors following Ciniselli's method use two at short distances from each other; some, however, use only the positive pole in the tumor, the negative being fixed at some point in the body. Althaus uses the negative pole alone upon the tumor. It must be remembered in this connection that at the positive pole

electrolysis takes place and cauterization at the negative, which is followed by scarring. The author recommends, therefore, that the positive pole be introduced into the tumor, from the centre towards the periphery, or rather four positive needles should be used at the same sitting, the negative pole, for which a flat electrode may be used, being placed as far away as possible upon the tumor, or even upon the upper part of the arm. The duration of the sitting should be two to four minutes, and then the needles should be introduced into new points and the current passed for an equal length of time. The needles should not be removed until the current has been cut off, and only a few drops of blood will follow their removal. The treatment should be repeated every six or eight days until the tumor disappears. The current should not be of great intensity,—twenty-five to thirty amperes will suffice. The needles must be kept in an aseptic condition, and the pain of the operation may be avoided by first chilling the parts with ether spray. Rarely will it be necessary to use a needle for the negative pole.

A. F. C.

Ranke: Etiology and Pathological Anatomy of Gangrene resulting from Noma. (*Jahrb. f. Kinderh.*, xxvii. 3.)

The author's investigations led to the following conclusions:

1. Different forms of gangrene resulting from noma can unquestionably occur spontaneously in children who have a tendency to disease of this character; that is, without contact with other cases of noma.

2. The frequent occurrence of cases of noma in public institutions, and the apparent preference of the disease for localization upon the mucous membrane of the different openings of the body, suggest that the origin of it may be referred to the penetration from without of micro-parasitic germs.

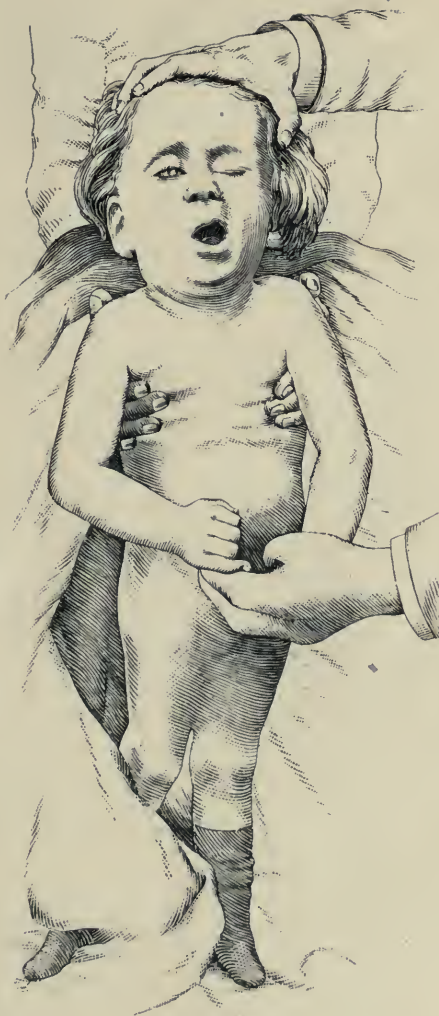
3. In the zone of tissue contiguous to that which has undergone necrosis from noma may be found cocci which have almost the characteristics of a pure culture. At the periphery of the necrobiotic zone which has been invaded by cocci the connective tissue is found to be in an active state of nuclear proliferation. The entire condition is suggestive of the tissue-necrosis in field-mice, which is caused by a chain-coccus, and has been described by Koch.

4. Up to the present time the specific nature of the cocci which are found in noma has not been shown.

5. In the tissue which bounds the necrobiotic areas are found peculiar processes of degeneration in the nuclei, which in some cases suggest *caryokinesis*. These changes in the nuclei appear to belong to necrosis in general.

A. F. C.





DR. J. LEWIS SMITH'S CASE OF INTRACRANIAL TUMORS.



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## Original Communications.

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### THERAPEUTICS OF INFANCY AND CHILDHOOD.

BY A. JACOBI, M.D.,

President of the New York Academy of Medicine, Clinical Professor of the Diseases of Children in the College of Physicians and Surgeons, New York, etc.

(Continued from April Number.)

#### III.—GENERAL THERAPEUTICS.

THERAPEUTICS of infants and children have enjoyed, or suffered from, their fate like “books” and those of adults. They have had their stages between the era of dull and ignorant prescribing and that of impotent and conceited nihilism. But neither a deluge nor an absence of drugs make a physician, nor do they contribute, when by themselves alone, to the welfare of a single individual or the community.

Much has been said of the difficulty of a diagnosis in the diseases of infancy and childhood, and the consequent difficulty experienced in treating them. I do not believe that the diagnosis in the case of an adult is much easier. The latter will often mislead you intentionally, or because he is carried away by prejudices and preconceived notions; the former may conceal by not being able to talk, but will certainly not tell an untruth. Besides, the ailments of children are but rarely complicated, and a single diagnosis tells the whole story. If it be not made, it is perhaps best for the practitioner not to



attempt much doctoring, and for the patient to be left alone. For, happily, most diseases have a tendency to get well, either completely or partially, and many will run a more favorable course when not meddled with.

This does not mean to say, however, that I discourage treatment even in such ailments as run a typical course extending over a number of days or weeks. On the contrary, I am opposed to the practice—much too common—of those who do not, for instance, wish to interfere with a whooping-cough because it finds its natural termination after several months. This is true, but many of the children find their natural termination also during these months. Every day of whooping-cough is a positive danger. A lobular pneumonia which occurs in the second or third month of the disease, and proves fatal or terminates in phthisis, would have been prevented if the original affection had been removed or relieved by treatment. A physician advising no treatment in such cases as terminate unfavorably in this manner, ought to be made punishable in the state of the future. Nor do I approve of the practice of “meeting symptoms when they turn up.” My responsibility is not lessened by my busying myself with subcutaneous injections of brandy when a collapse has set in which I ought to have foreseen and prevented, or with giving digitalis when on the fifth or sixth days of a pneumonia the pulse is flying up to 160 or 200. Anybody can perform that sort of perfunctory expectative treatment extending from the first call to the writing of a death certificate. What I expect of a physician is to know beforehand whether that individual heart will carry its owner through an inflammatory or infectious disease without requiring stimulation or not. Many a case might be saved by a few grains of digitalis, or another cardiac tonic, or a few efficient doses of camphor or musk, if administered in time.

Altogether, it has always appeared to me most satisfactory to treat children. They are truthful, unsophisticated; they are what they appear, and they appear what they are. In their pathology and therapeutics there is no mysticism, no faith-cure, no spiritism, nor any other diabolism. Their nature and that of their ailments are simple enough, but you must know

how to understand them. Fortunately, children are no mere miniature editions of adults, and their ills and whims and their peculiarities must be known.

There is one all-important principle in treating infants and children which cannot be repeated too often. They are very liable to become anæmic, to submit to general inanition, and suffer from failure of the heart in spite of its anatomical and physiological vigor. These facts render it urgent that the physician never lose sight of the general condition of the patient while attending to a local disorder.

The best treatment is preventive. Proper feeding and nursing of the infant prevent the numerous gastric and intestinal diseases of the earliest period, which either destroy life at once, or lay the foundation of continued ill health. For that reason a rather large part of my literary labors has been dedicated to the questions of diet and hygiene. Attention to respiration and circulation and the functions of the skin are of similar moment. Bathing, cold washing, exercise, sufficient interruption of school hours, are subjects of vital importance. The best exercise of the child is play. Compulsory gymnastics in badly-ventilated localities cannot take its place successfully. The summer vacations of school-children ought to be four weeks longer than they are. The public schools ought to be closed about the middle of June and reopened in the beginning of October. Some years ago the Harlem Medical Association and the Medical Society of the County of New York requested the Board of Education of the city to open the public schools on the third, in place of the first, Monday in September. The soundness of the principle was appreciated, and the necessity for such a change was acknowledged by the authorities, and *therefore* (!) the second Monday of September was selected for the beginning of the school season, so as to afford the children an extra week's boiling in the city sun and an opportunity to lose, as they did formerly, the benefit derived from the summer vacation. The good effects of the excursions of the St. John's Guild, and the air funds, and the Sanitaria of the Guild, and the Children's Aid Society are steps in the right direction.

Milk and drinking-water are safest when boiled. It is to

be hoped that the practice of sterilizing milk devised by Soxhlet, of Munich, and planned by Caillé, of New York, and Rotch, of Boston, will prove successful. Mental and physical labor ought to be easy and pleasant. Factory work for children is an abomination, and not only a cruelty committed against the individual child who is helpless, but a danger to the future of the republic, which cannot be expected to thrive while the physical and intellectual development of the future citizen is crippled by the greed of the manufacturer and the recklessness or partiality of legislatures.

In the administration of medicines excitement on the part of the patient must be avoided; the nervous system of infants and children loses its equilibrium very easily. Fear, pain, screaming, and self-defence lead to disturbances of circulation and waste of strength. Preparations for local treatment or the administration of a drug must be made out of sight, and the latter ought not to have an unnecessarily offensive taste. The absence of proper attention to this requirement has been one of the principal commendations of "homœopathy," whatever that may have been the last twenty-five years. Still, the final termination of the case and the welfare of the patient are the main objects in view, and the choice between a badly-tasting medicine and a fine-looking funeral ought not to be difficult. In every case the digestive organs must be treated with proper respect; inanition is easily produced, and vomiting and diarrhoea must be avoided. The most correct indications and most appropriate medicines fail when they disturb digestion; it is useless to lose the patient while his disease is being cured.

The administration of a medicament is not always easily accomplished. Indeed, it is a difficult task sometimes, but one in which the tact or clumsiness of the attendants have ample opportunities to become manifest. For "when two do the same thing, it is by no means the same thing." Always teach a nurse that a child cannot swallow as long as the spoon is between the teeth; that it is advisable to depress the tongue a brief moment, and withdraw the spoon at once, and that now and then a momentary compression of the nose is a good adjuvant. That it is necessary to improve the taste as much as possible need not be repeated. Syrup will turn sour in warm



weather, glycerin and saccharin keep; the taste of quinine is corrected by coffee (infusion or syrup), chocolate, and "elixir simplex," a teaspoonful of which, when mixed each time before use, suffices to disguise one décigramme = one and a half grains of sulphate of quinia. Powders must be thoroughly moistened; unless they be so, the powder adhering to the fauces is apt to produce vomiting. Capsules and wafers are out of the question, because of their sizes; pills, when gelatin-coated or otherwise pleasant and small, are taken by many. The rectum and nose can be utilized for the purpose of administering medicines in cases of trismus, cicatricial contraction, or obstreperousness. Both of these accesses it may become necessary to resort to for weeks in succession.

The effect of a medicine depends on its dose and the readiness with which it is absorbed and eliminated. The latter differs greatly. Curare is eliminated speedily, and must be repeated quite frequently; iodide of potassium soon after its administration, but there are traces in the urine after some days; phosphate of lime appears in the urine and fæces directly; chlorate of potassium is excreted through the kidneys within a few hours, silver and mercury may take a long time, in exceptional cases. Absorption takes place the more readily the more the solution in which the medicinal substance is held is diluted; but it depends greatly on the condition of the surface or tissue which is selected for the introduction of the drug. A horny skin absorbs but little; inunctions require a clean surface, and are best made where the epidermis is thin and the net of lymph-ducts very extensive, on the inner aspect of the forearm and the thigh. A congested stomach, a catarrhal or ulcerated rectum, are more or less indolent, and disappoint our expectations quite frequently. That the doses must be adapted to the ages of the patients is self-understood; but to establish fixed rules is more than merely difficult. To give as many twentieths of the dose of an adult as the child has years is a fair average; but this rule suffers from very numerous exceptions. Like foods which are tolerated by the adult, but are not tolerated by the young, though their amounts be diminished in proportion to their years, so there are medicines which are not borne by the infant. Nor

are the doses the same for every adult. As healthy persons thrive on different quantities of food, so there is a variableness in the amount of medicines required for a full effect. Besides, there are idiosyncrasies which in some forbid the use of a medicine apparently indicated and borne with success by others. There are those who respond quickly, and sometimes too quickly, to very small doses of opium; others in whom a minute trifle of mercury produces salivation. It is this class of cases which gives rise to much disappointment, and requires all the tact and foresight of a good physician. In some the system gets used to a drug after a short time. Babies, after having taken opiates for some time, demand larger, and sometimes quite large, doses to yield a sufficient effect. Some drugs are required in proportionately large doses. Febrifuges and cardiac tonics, such as quinia, antipyrin, digitalis, strophanthus, sparteine, convallaria, are tolerated and demanded by infants and children in larger doses than the ages of the patients would appear to justify. Iodide of potassium may be given in doses of one or two drachms daily in meningeal affections, while in the same, one of the heart tonics, caffeine, must be shunned because of its—under these circumstances—exciting and irritating effects. Mercurials affect the gums very much less in the young than in advanced age. Corrosive sublimate, in solutions of one to six or ten thousand, may be given to a baby of two years with membranous croup in doses of a fiftieth of a grain every hour or two hours, for five or six days in succession, with rarely as much as the most trifling irritation of the gums or the stomach and intestines. In urgent cases of hereditary syphilis it can be administered on a similar plan for weeks, and, somewhat modified, for months.

The dose of a medicine depends no less on the mode and locality of its administration. Modern therapeutics favor as much as possible local medication, like modern pathology, which requires local diagnoses. Subcutaneous administration dictates smaller doses, the rectum mostly a slight increase. This is a subject, however, to which we shall return. The manner of application results also in different effects. The inunction of the officinal ointment of iodide of potassium is wellnigh inert; its effect is almost exclusively that of massage, for iodine

makes its appearance in the urine after days only. Iodide of potassium in glycerin, rubbed into the skin a number of times, may eliminate iodine after a day, in lanolin after a very few hours.

The rectum of the infant and child has been rising in the estimation of the practitioner since the times of thermometry ; for it is certainly the safest and easiest place where to take the temperature. For therapeutical measures it is also invaluable. Its importance for the purposes of alimentation has been detailed in a former chapter.

The rectum of the young is straight, the sacrum but little concave, the sphincter ani feeble, and self-control gets developed but gradually. Thus a rectal injection is easily either allowed to flow out or vehemently expelled. Therefore one which is expected to be retained must not irritate. The blandest and mildest is a solution of six or seven parts of chloride of sodium in a thousand parts of water. This may be made to serve as a vehicle of medicine, unless incompatible with the latter, which will be but rare. An enema which is to be retained must be tepid and small in quantity, half an ounce or little more or less, and carried up well into the rectum, for the immediate contact with the sphincter may produce its expulsion. Care must be taken to exclude air from the syringe, which, for small quantities, must be a well-fitting piston syringe, of hard rubber, with a long nozzle. This must be well oiled, and introduced, not straight, but with a gentle turn, so as to avoid folds in the anal mucous membrane (in the same way a thermometer *ought* to be introduced). The nozzle must not be too thin, as it is liable to be caught ; the smallest nozzles of fountain syringes are therefore in most cases improper ; the larger size is more appropriate for any age. The injection must be made while the patient is lying on his side, not on his belly over the lap of the nurse, for in this position the space inside the narrow infantile pelvis is reduced to almost nothing.

When medicines are to be injected, the rectum ought to be empty, as in infants it mostly is. When it is not, an evacuating injection ought to precede the medicinal one by half an hour. It ought to be of the mildest possible nature, for any irritation of the rectum, from the local effect of an enema



to a catarrhal or dysenteric process, reduces its faculty of absorption. The medicinal solution must not be saturated; indeed, very soluble medicaments only are to be selected for medicinal enemata. Nor must they be acid, or contain anything irritating. Alcoholic tinctures require relatively large quantities of water; quinia salts must not be selected unless very soluble, such as the muriate, bromide, bisulphate. No acids must be used for the purpose of keeping them in solution. Salicylate of sodium, also antipyrin, exhibit their full power through the rectum, and permit of full doses. As a rule, however, the rectal doses are a little larger than those given by the mouth.

Larger enemata are not retained, and are therefore utilized for the purpose of emptying the bowels. This effect is easily obtained in infants and children, for their fæces are soft and movable, with the exception of those cases in which improper medicines (large and continued doses of lime and bismuth, or astringents), or badly-selected food (casein and starch in undue quantities), or an excess of the normal great length of the colon descendens and sigmoid flexure have given rise to large accumulations of hardened fæces. Small quantities are seldom sufficient for the purpose of relieving the bowels, unless they act as irritants; in this manner glycerin, pure or with equal parts of water, may produce an evacuation readily. An evacuant injection may weigh from a fluidounce to a quart in some. It ought to be given while the child is lying down; the liquid must not enter the bowels quickly or vehemently, the fountain syringe not being more than ten or twelve inches above the anus. If that precaution be observed, occasional pain, or faintness, or vomiting can be avoided. If water, or water with two-thirds of one per cent. of salts, be insufficient, more salt or soap may be added for the purpose of enforcing the evacuation. Half a tablespoonful of oil of turpentine, with a pint of soap and water, acts often charmingly; so does the addition of a few drachms of tincture of assafœtida, in conditions of constipation, flatulency, and nervous excitability, also in convulsions, or glycerin in obstinate constipation.

Large injections will have other indications besides that of evacuation of the bowels. In many cases of intense intestinal

catarrh large and hot ( $104^{\circ}$  to  $108^{\circ}$  F.) enemata will relieve the irritability of the bowels and contribute to recovery. They must be repeated several times daily. When such evacuations contain a great deal of sticky viscid mucus, the addition of one per cent. of carbonate of sodium will liquefy the tough secretion. When there are many stools, and these complicated with tenesmus, an injection, tepid or hot, must or may be made after every defecation, and will speedily relieve the tenesmus. In such cases flaxseed tea or a thin mucilage may be substituted for water.

When the bowels are in a state of chronic catarrh or ulceration, the injections ought to be particularly large and contain astringent or alterant medicines. Though they be expelled immediately, enough of the dissolved or suspended remedy will remain upon the mucous membrane. Sulphate of zinc, alum, subacetate of lead, tannic acid, nitrate of silver, salicylic acid, carbolic acid, and creasote have been used in such medicated injections. One per cent. solutions will suffice. Salicylic and carbolic acid may prove uncomfortable or dangerous, and ought to be dispensed with. Nitrate of silver requires some precaution. From a grain to five grains or more in an ounce of distilled water may be safely injected, but this enema must be preceded by an evacuant one consisting of water only, and followed by one containing some chloride of sodium for the purpose of neutralizing the nitrate and protecting the anus and external parts from local irritation. It will also be found advantageous to wash the anus and perineum with salt water before injecting the silver solution. In many cases where one of the above-mentioned agents appeared to be tolerated badly, or proved inefficient, subnitrate (or subcarbonate) of bismuth mixed with water, or gum-acacia water, in different proportions, proved very acceptable and healthful.

Suppositories are useful both for evacuating and medicinal purposes. Soap is utilized for the former purpose by the public at large, and the same material differently mixed, with or without medicinal additions, such as atropia, by the irregular trade. Local medicinal applications to the rectum are best made by means of injections, but a general effect is also obtained through a suppository. Opiates, and narcotics

generally, exhibit their full power when the suppository is retained. Extract of hyoseyamus, from half a grain to a grain in a suppository, to be repeated from two to five times daily, shows its effect in vesical spasm nearly as well as when taken internally. Quinia is gradually dissolved and absorbed. Extract of nux, both in ointments and in suppositories, acts well in prolapsus of the rectum and debility of the sphincter.

(To be continued.)

## ON VENEREAL AND GENITO-URINARY DISEASES OF CHILDREN.

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(Continued from April Number.)

### V.—AFFECTIONS OF THE TEETH, EYE, AND EAR.

IN the year 1863, Hutchinson, of London, published in a monograph entitled "A Clinical Memoir on Certain Diseases of the Eye and Ear Consequent on Inherited Syphilis," the first account which was given of the teeth as a diagnostic means in cases of inherited syphilis. He stated that "by far the most reliable among the objective symptoms is the state of the permanent teeth, if the patient be of age to show them. Although the temporary teeth often, indeed usually, present some peculiarities in syphilitic children of which a trained observer may avail himself, yet they show nothing which is pathognomonic, and nothing I dare describe as worthy of general reliance. The *central upper incisors of the second set* are the test teeth, and the surgeon not thoroughly conversant with the various and very common forms of dental malformation will avoid much risk of error if he restricts his attention to this pair."

"In syphilitic patients these teeth are usually short and narrow, with a broad vertical notch in their edges, and their



corners rounded off. Horizontal notches or furrows are often seen, but they, as a rule, have nothing to do with syphilis. If the question be put, Are teeth of the type described pathognomonic of hereditary taint? I answer unreservedly that, when well characterized, I believe they are. I have met with many cases in which the type in question was so slightly marked that it served only to suggest suspicion, and by no means to remove doubt; but I have never seen it well characterized without having reason to believe that the inference to which it pointed was well founded."

In this statement of Hutchinson it will be seen that he lays stress upon the central upper incisors of the second set—that is, of the permanent teeth—as being the ones which are the test teeth, and although he speaks of notches and furrows being present, he evidently regards them as having nothing to do with syphilis. It is very true that in a subsequent communication he somewhat modifies this statement which he makes; but for our present purpose the statement as contained in his earlier work will be the one to be especially noted. Within the past twenty years or more this question of the deformity of syphilitic teeth has attracted much attention, not only in England, where it would naturally be adopted, but upon the Continent, where the points laid down by Mr. Hutchinson have not met with very general acceptance. Indeed, many foreign observers are inclined to deny that much significance is to be attached to the teeth as a test in hereditary syphilis; but although, as we shall see later on, there are many cases in which mistakes may very easily be made, where they are present in a classical form, they are undoubtedly of much assistance in forming a diagnosis. It has been shown by extended observation that not only do the permanent, but the deciduous teeth also show evidences of inherited taint,—a point which Hutchinson in his earlier statements had considered as of no importance, and these points are the ones which have attracted more especial attention and been the objects of more general study than the lesions which he had pointed out in the permanent set.

The teeth in inherited syphilis may be attacked in two ways: First, by being retarded in their development.

Second, by a modification in their structure.

As regards the retarded development. Sanchez in the last century noted it as a curious point that in syphilitic children the teeth were developed later than they were in healthy children, and that point has been confirmed by many observers. Fournier observes that syphilitic children oftentimes do not get their teeth until they are ten, twelve, fourteen, and often fifteen months of age. These relate more particularly to the first dentition, but there are cases recorded which show that the same is true of the permanent teeth.

Demarquay records the case of a syphilitic child which at four years of age had no teeth at all and which could not walk. Lanceran ("Traité de la Syphilis") has given the minutes of an extraordinary case of a syphilitic child which was epileptic, idiotic, and microcephalic, and in whom at the age of twelve years the lateral incisors and canines had hardly emerged from the alveoli.

*Modifications of Structure.*—These modifications may be divided into four principal groups:

1. Erosions.
2. Dwarfing of the teeth (microdentism).
3. Dental amorphism.
4. Frangibility of the teeth.

It must be borne in mind, in speaking of these modifications of structure, that they apply to both the deciduous as well as the permanent teeth; in other words, both dentitions may be attacked, and Fournier, in the *Annales de Dermatologie et Syphiligraphie* for 1883, cites the case of a child which at twenty-seven months of age presented perfectly well-marked crescentic teeth, the ones in this case being the two median upper incisors, which were typical specimens of Hutchinson's teeth. It should be noted, however, that the deciduous teeth are less liable to be affected than the permanent teeth, leaving Mr. Hutchinson's statement, so far as that is concerned, perfectly true.

Another curious point with regard to these teeth is that they are usually multiple and symmetrical,—that is to say, if the incisors are attacked, both are liable to be affected,—and the same is true of the canine and molars. Erosions in the teeth occur

in the crown, which looks as though it had been eroded either by a file or by acids, and which is discolored, differing from the healthy white appearance of normal teeth. Of these erosions there are four varieties :

1. Where the erosion is cup-shaped.
2. Where it occurs in facets.
3. In grooves.
4. In layers.

Lèt us take the first variety, the cup-shaped, and here we observe two distinguishing marks,—first, that there are excavations in the crown ; and, second, that the tooth itself is of a dirty gray or brown color, sometimes even black. All kinds of teeth may be thus attacked, but the lesion is usually more marked in the upper median incisors. Their number varies, sometimes only one being affected, sometimes several. The excavations vary in their mode of grouping, being at times regular, at other times irregular, but as a general thing they are arranged in two horizontal lines, one above the other.

The second variety, where the erosion occurs in facets, is less common than the preceding variety, and is less well known. Like the cup-shaped erosions, it may occur upon all kinds of teeth, but is generally found upon the incisors, and presents the appearance as though the intermediate portion of the teeth had been eaten away by an acid, or as though they had been turned with a planing spoke.

The third variety, that which occurs as grooves, is identical with the form which Parrot describes under the head of “*Atrophie Dentaire Sulciforme.*”

In the first form the groove appears to be very superficial, and is not easily perceived without a magnifying-glass. It is linear in its shape, and looks exactly as though scratches had been made across the tooth.

In the second form a marked furrow is apparent, larger and deeper than what occurs in the first-mentioned form, and is usually from a half to one millimetre distant from the gum. The enamel is defective, and the dental ivory is seen to be stripped off at the bottom of the furrow. The teeth are nearly always grooved in a horizontal direction, and the furrow is usually single. Sometimes, however, there may be two or three



arranged on the same tooth, one above the other, occupying the portion of the tooth nearest its cutting edge.

The fourth variety is where the erosion occurs in layers. This variety gives the tooth a most singular appearance, looking as though it were honeycombed throughout its entire extent, with layers of sound enamel between the erosions, which are quite broad.

Besides these erosions of the crown, erosions of the free edge of the tooth also occur, and these usually attack the molars, canines, and incisors. Of the molars, the first great molar is the only one which is affected, none of the others being attacked, and this consists in a true atrophy of the summit of the tooth, which Parrot called "*Atrophie Cuspидienne*." The crown of the tooth for two-thirds or three-fourths of its height is normal, but the upper segment is diminished in all its diameters, as though it were atrophied, and is separated from the lower segment by a circular furrow. It presents the appearance of a small tooth springing from a larger one, or, as Magitot expresses it, as though a stump of ivory were emerging from a normal crown. The triturating surface of the tooth is also modified, for, instead of presenting its normal shape, it has an irregular surface channelled here and there with deep grooves having rough projections. The color is either yellow or dirty brown, and this condition occurs during the early period of the lesion in infancy. From use the tooth wears down and becomes smooth, losing the stump, but changes occur in its height. It is shortened, and has a plane surface with a yellow centre and a peripheric ridge of white enamel.

These erosions of the free border appear on the canines,—

1. As a V-shaped notch.
2. As a true atrophy of the free extremity, which undergoes a marked circular excavation and is reduced to a slender stump of conical shape.

In the incisors these erosions present the following varieties :

1. An angular notch (V-shaped).
2. A scalloped edge (saw-shaped teeth).
3. An atrophic thinning of the free border with antero-posterior flattening. The stump of such a tooth is thin, flattened from before backwards, sometimes so much so as to be

reduced to a single lamella. Its surface is irregular, ridged, and covered with vertical or horizontal grooves, and presents a yellow, grayish, or black discoloration.

In some cases this thinning of the stump of the tooth is excessive, being reduced to the thickness of a sheet of heavy paper (Lallier). Such a tooth is very friable and wears down quickly.

A general atrophy of the summit, similar to what occurs in the molars and canines, is also observed in the incisors. At the base the tooth is normal, but at a few millimetres from its summit it is strangulated by a circular groove, and from the summit of the tooth emerges a small misshapen stump of a dirty gray or yellow color.

The crescentic notch of Hutchinson is of a semilunar shape, and bevelled off at the expense of the anterior border and with rounded angles. The tooth is often reduced in size in its vertical diameter and narrower than normal.

The incisors, instead of presenting the appearance as just described, are sometimes broad near the gum and narrow at their free edge, and were called by Hutchinson screw-driver teeth, from a slight resemblance to that tool. At other times the cutting edge flares outwards, presenting a crescentic notch in the middle.

Another peculiarity of these teeth is the fact that they are very irregular in their arrangement, being placed oftentimes at an oblique angle to each other instead of being arranged in the even and regular method which normal teeth display.

In speaking of the crescentic or Hutchinson's notch, Fournier, in the *Revue Odontologique* for 1887, states that gradually the notch becomes effaced by the wearing away of its angles. This occurs between the ages of twenty and twenty-two years. At twenty-five the edge of the tooth becomes almost plane and rectilinear, and by the time the patient has reached thirty years of age no sign of the notch is left. At the earlier age, between that of twenty and twenty-two years, there still remains a sign which shows the former existence of the notch, —viz., the bevelling of the anterior border of the tooth. This, however, gradually wears away and presently no trace of the notch is left.

Hutchinson stated that his notch was present only in the upper median incisors. Besides these teeth, the notching is sometimes observed in others,—viz., the upper lateral incisors, the lower incisors, and sometimes, but very rarely, in the canines. When the upper central incisors are notched it sometimes happens that they lose the symmetry to which attention has been called, thus only one may be notched, and the other one may be apparently perfectly sound.

These erosions which have been described occur in the first great molars, in the incisors and the canines, but they are not found in the bicuspid nor in the second or third large molars, and the reason for this is a perfectly physiological one. The teeth which suffer are those which undergo the process of dentification during intra-uterine or the first three or four months of extra-uterine life, at the time when syphilis is most active. Thus the first great molars begin to be developed towards the sixth month of intra-uterine life, the incisors during the first month, and the canines during the third or fourth month of extra-uterine life. Hence these teeth are the ones which are attacked. As the other teeth do not calcify until later, the bicuspid not until the fifth or sixth month of extra-uterine life, the second molar not before the third year, and the third molar not until twelve years of age, they escape all injury from syphilis.

*Microdentism.*—It sometimes happens that in both the temporary as well as the permanent teeth some are found which are small and evidently undeveloped. These are principally the incisors of both upper and lower jaw, where the teeth seem as though they were just emerging from the alveoli, and perhaps never going beyond that point. They are friable and easily decay from use, so that they become worn down to a level with the gum. They are nearly always discolored, being generally of a black or dirty gray hue.

Since Hutchinson first called attention to this condition of the teeth, it has been noted that similar notches and erosions occur in cases in which there is no evidence whatever of syphilis; and although notched teeth may be of value within certain limits, it is only when they are associated with other and indubitable signs of inherited syphilis that they become



of marked significance. The surgeon should be slow to state positively that they are caused only by inherited syphilis. Thus Magitot says, and very correctly, that in eclampsia these erosions are often seen as the result of a nervous affection in which syphilis plays no part at all, and he furthermore states that similar erosions have been found in animals, the ox, and quotes Capitan and Trasbot to show that they have occurred in the dog, in neither of which animals, so far as we know, has syphilis ever been observed. White, of Boston, also states (*Archives of Dermatology*, 1878) that he has seen a boy in whom the central incisors were notched from side to side and in whom the lateral incisors were wanting, where there was absolutely no suspicion of syphilis whatsoever, and that the deformity followed a sudden and severe attack of cervical adenopathy. Magitot furthermore states that he has seen a child in whom erosions were produced from chronic enteritis, and in this case the incisors, canines, and bicuspid were completely disorganized. The enteritis began when the child was two months old, and was prolonged for two years, and only those teeth which were developed during this time were attacked; the second and third molars, which were developed after the second year, were not affected.

Pieckiewicz states that he has seen similar erosions in a patient aged eighteen months, who fell from the first story of a house and received such severe injuries as kept the child in bed for several months.

Rattier ("Thèse de Paris") speaks of similar erosions occurring in a child whose mother, while pregnant with it, sustained severe injuries accompanied by uterine hemorrhages, and Fournier gives another remarkable case where serious disease of the liver with prolonged icterus is said to have been the cause of dental erosions in a child. I have myself seen notching of the deciduous teeth in a child two years of age in whom there was no evidence of syphilis, and in whose parents I could neither find any traces of syphilis nor any history of the disease.

Morel-Lavallée (*Annales de Dermatologie et Syphilis*, 1887) gives a curious case under the head of "False Hutchinson's Teeth: Professional Deformity in a Cobbler," where a man

came into the hospital with acquired syphilis who had notching of both upper median incisors identical with what occurs in the so-called Hutchinson's teeth. The two teeth were not similarly notched; in the upper median incisor of the right side the notch was to one side of the median line, in the left it was in the median line. No other teeth presented any peculiarities, and this deformity was produced by the wearing away of the teeth from a habit the man had of holding soling tacks in his mouth.

Thus it will be seen that there are some instances where notches and erosions of the teeth occur apart from syphilis, so that we must admit that while they are of unquestioned advantage in many cases in helping us to form a diagnosis, they are by no means pathognomonic of inherited syphilis. Taken by themselves, they may be open to doubt, and should not be seriously considered except in connection with other manifest signs of inherited syphilis, such as keratitis interstitialis, iridochoroiditis, or sudden and complete deafness. Very frequently patients with the syphilitic teeth present, in addition, the classical symptoms of the sunken nose, the scars at the angles of the mouth, and the pasty, flabby complexion.

Of course, many cases of syphilis occur in which there is no deformity whatever of the teeth, and it is only when they are present that care should be taken in discriminating between those which are really due to syphilis and those which are perhaps due to accidental and other causes.

*Eye.*—The affections of the eye which occur in inherited syphilis are of the most varied description. An inflammation occurs at the ciliary borders of the lids, which differs but little from ciliary inflammations due to other causes, except that they are peculiarly obstinate and resist the ordinary forms of treatment. They are very frequently associated with complete loss of the eyelashes.

In the work already quoted, Hutchinson lays stress upon the affection known as chronic interstitial keratitis, and states that it "usually commences as a diffuse haziness near the centre of the cornea of one eye. There is at this stage no ulceration, and exceedingly slight evidence of the congestion of any tunic. The patient, however, almost always complains of

some irritability of the eye as well as of dim sight. If looked at carefully, the dots of haze are seen to be in the structure of the cornea itself, and not on either surface. They are also separated from each other like so many microscopic masses of fog. In the course of a few weeks, or it may be more rapidly, the whole cornea, except the band seen at its margin, has become densely opaque by the spreading and confluence of these interstitial opacities. Still, however, the greater density of certain parts—centres, as it were, of the disease—is clearly perceptible. Early in this stage the comparison to ground glass is appropriate. There is now almost always a zone of sclerotic congestion and more or less intolerance of light and pain around the orbit. After one or two months the other cornea is attacked and goes through the same stages, but rather faster than the first. A period in which the patient is so far blind that there is but a bare perception of light now often follows, after which the eye first affected begins to clear up. In the course of a year or eighteen months a very surprising degree of improvement has probably taken place. In milder cases, and under suitable treatment, the duration may be much less than this, and the restoration to transparency complete; but in many instances patches of haze remain for years, if not for life. In the worst stage the corneal surface looks slightly granular, and from the very beginning it has lost its polish and does not reflect images with definite outlines. In certain cases after the ground-glass stage is passed a yet more severe one ensues, in which the whole structure of the cornea becomes pink- or salmon-colored from vascularity, and in this crescentic fringes of vessels are often noticed on its circumference. In the best recoveries the eye usually remains somewhat damaged as to vision, and often a degree of abnormal expansion of the cornea is apparent. Only in one or two cases have I ever observed ulcers of distinguishable size on the surface of the cornea, and I have scarcely seen pustules on any part of it."

In addition to this condition of keratitis another one is oftentimes observed which is very peculiar. It consists of small grayish points, scattered about in the deeper portion of the cornea, usually on Descemet's membrane, the interstitial



and epithelial layers of the cornea not being affected. This is known under the name of the punctate variety of syphilitic keratitis.

The iris also is the seat of attack, which usually begins as a congestion of the vessels of the conjunctiva and sclerotic, surrounded by a well-marked zone of vessels about the limbus corneæ. After a short time lymph is effused about the pupillary margin of the iris, oftentimes so abundantly as to produce complete occlusion of the pupil. This variety is frequently complicated with keratitis of the variety already described, and is nearly always followed by adhesions of the pupillary margin, either anteriorly to the cornea or posteriorly to the capsule of the lens.

The choroid and retina are also attacked in this variety of disease, first in the shape of an effusion of lymph in the choroid, afterwards by an aggregation of pigment-cells heaped irregularly here and there throughout the infiltrated tissues, and, lastly, by large patches of atrophy. In the retina the effusion is oftentimes quite marked, resulting in a detachment of this tunic and consequent blindness. The optic nerve also presents a pink and congested appearance at the onset of the attack, afterwards becoming white and atrophic.

Sometimes, as a result of these attacks of the iris and choroid, opacities occur in the crystalline lens which may lead to cataract. Hutchinson says that he has never seen a case of congenital cataract in syphilitic children, but that it usually occurs several years after birth, oftentimes following an attack of kerato-iritis, and is frequently complicated with aquo-capsulitis.

*Ear.*—Two varieties of affections of the ear occur in inherited syphilis, the first of which is accompanied by suppuration, and is frequently followed by perforation of the tympanum, which is sometimes partially, sometimes completely, destroyed. The suppuration is persistent in its course, and the remains of the tympanum are often affected with calcareous degeneration. Either ear may be affected; the attack is usually painless, none of the symptoms of inflammation such as occur in otitis media suppurativa being present. It is also rapid in its course.

The second variety is where total deafness occurs unaccom-

panied by any suppuration, and coming on without pain or any preceding symptoms. It is sudden in its attack, rapid in its course, and usually ends in complete deafness without any appreciable lesions being discovered. This variety of disease is probably due to an affection of the labyrinth, and perhaps in some cases to brain lesions or to neuritis of the auditory nerve. This variety is more commonly met with in late hereditary syphilis, and generally occurs about the ages of twenty or twenty-five.

Knapp (*Zeitschrift für Ohrenheilkunde*, 1880) gives a case where this deafness occurred at fourteen years.

Todd, in the *St. Louis Courier of Medicine* for 1884, gives an instance which occurred at eighteen years of age, and Buck (*N. Y. Medical Record*, 1887) a very doubtful one at seventeen years.

Kipp (*Transactions of the American Otological Society*, 1880) gives the records of six cases in which the ages ranged from six and a half to twenty-three years of age. In five cases double interstitial keratitis preceded the attack; in one it followed it. In five cases the deafness was bilateral and followed a rapid course. In one it was at first slow, then it suddenly became rapid in its course. In one case cerebral symptoms preceded the deafness, and in all cases ringing in the ears, headache, vertigo, and loss of equilibrium were present. In three cases the tympanum was affected, in all of them the Eustachian tube was permeable. In all of the cases there had been naso-pharyngeal catarrh.

Kipp thought from the symmetry of the deafness that there was probably some lesion of the floor of the fourth ventricle.

*Deafmutism* may sometimes be caused by inherited syphilis, and as a rule this happens in those children who have been affected before puberty with cophosis. Being deaf they have not learned to talk, and hence remained dumb. Dolby (*London Lancet*, 1877) considers that next to scarlet fever syphilis is the most frequent cause of deafmutism in children. He considers it as a nervous affection, and not as a disease of the conducting part of the auditory canal. He calls attention to the fact that otorrhœa may often occur in syphilitic children without having any connection whatever with the syphilis.

Besides these affections of the ear, Hermet (*Annales de Dermatologie et Syphiligraphie*, 1884) gives the case of a syphilitic child, three years of age, who was affected with otitis media suppurativa of the left ear and perforation of the tympanum.

This condition of affairs was accompanied in the same ear with an ulcerative syphilide of the external auditory canal.

16 WEST THIRTY-SECOND STREET, NEW YORK CITY.

(To be continued.)

## A CASE OF TUMORS OF CEREBELLUM AND PONS VAROLII.

BY J. LEWIS SMITH, M.D.,

Clinical Professor of Diseases of Children, Bellevue Hospital Medical College.

ROBERT TRACY, whose disease is the subject of this paper, was examined by the Neurological Section of the Academy of Medicine in April, 1887, and at different college clinics previously and afterwards. His mother stated that his father belonged to a family predisposed to tuberculosis, and that her own health was good, but that her brother had died of tubercular meningitis. Robert's father, whom I afterwards saw, seemed fleshy and strong, but the mother was of spare habit, and did not appear robust. She stated that Robert was well until March, 1886, when, at the age of thirteen months, he was struck violently by a leather-covered, hard, and unyielding base-ball. The point of injury corresponded with the seventh cervical vertebra. The blow did not render him insensible or prostrate him, but he screamed half an hour from the fright or pain. His disease the mother attributes to this injury, and she states that he has never been well since it occurred.

On the second day after the hurt his head was inclined to the left side, and this inclination continued during the spring and summer months, but he was able to stand and walk till October, 1886. In October he had lumps in his throat, became feverish, began to vomit, and his head was more or less retracted during the following four or five weeks. In the



beginning of December the right side of his face became paralyzed, and a little later internal strabismus of the right eye occurred.

On January 22, 1887, ten months after the injury by the ball, the child was taken to the clinic of Professor M. Allen Starr, in the Polyclinic School, and he has kindly furnished me the following notes of the case. He was informed by the parents that the boy had to appearance nearly or quite recovered from the effects of the blow, when in "October, 1886, both legs seemed weak, and the weakness has continued. In November, a discharge from the right ear occurred, and soon after the right side of the face became paralyzed, and the right eye turned towards the median line (internal strabismus). The child has had no convulsions or spasm of the face. Examination shows that the sixth, seventh, and eighth nerves on the right side are paralyzed, and there is some anæsthesia of the entire half of the face on the same side. The legs are weak, but are not cold or cyanotic; sensation good, tendon reflexes normal; no ankle clonus; no contractures of arms or legs.

*"Electric Examination.*—No reaction to the faradic current in the muscles of the face on the paralyzed side. The child struggles so that galvanic tests are impossible. Faradic reaction in the arms and legs is normal, all muscles acting properly.

*"Diagnosis.*—Some local lesion at base of brain involving the fifth, sixth, seventh, and eighth nerves, and producing such pressure on the motor tracts as to cause weakness of voluntary motion. Probably the vomiting is cerebral, as food makes little difference with it; possible pressure of lesion also on the tenth nerve. The lesion is unilateral, but the pressure affects both motor tracts; nature of lesion doubtful,—possibly a tubercular mass (primary tubercle) with a low grade of meningitis around it secondary to the tumor; possibly a simple meningitis secondary to the disease of the ear, which caused the discharge. Prognosis bad; treatment, cod-liver oil emulsion; potass. iodid, gr. iii, three times daily."

January 31, case examined at the Demilt Dispensary, by Professor Winters, of the New York University, who observed slight spasms of the posterior cervical muscles, which

the mother said she had not noticed previously. She also stated that the vomiting, which had been a prominent symptom for months, was less.

On February 7 and 25 the patient was again examined, by Professor Starr, without the discovery of any new symptoms except a small corneal ulcer. The paralysis remained about the same; he had no fever. The mother stated that on some days there was no vomiting, and on other days all the food and medicine were vomited; pulse regular; occasional spasms of the muscles of the neck, but no persistent spasms; right eye and apparently entire right side of face lacking in sensitivity.

March 8, the child was brought to the children's clinic in Bellevue Hospital Medical College. The mother detailed the history as already given, and stated that the right eye had been several weeks constantly open and exposed to the air and light. I found no action in the eyelids, which were permanently open from paralysis of the orbicularis palpebrarum. The eye was not only turned inward and having little or no motion, but was the seat of a severe keratitis, and white spots and an ulcer had appeared on the cornea; his extremities were cool; he could bear his weight upon his feet, but could not walk; the mother stated that he vomited every morning on waking, and that vomiting had for months been a prominent symptom during the day; he was fretful, considerably emaciated, as might be expected from the frequent loss of his food, and seemed at times to have headache.

I found that all his limbs, though weak, were sensitive, so that they moved when tickled or pinched. He lies quiet most of the time, frets when moved, and has apparently hyperæsthesia in places; rectal temperature  $99.6^{\circ}$ , and he frets when it is taken, as if the rectum were over-sensitive. Dr. Mitten-dorf, oculist, kindly consented to examine the eye and ear on the affected side, and he stated that the optic and auditory nerves were apparently normal. He attributed the keratitis and corneal ulcer to the constantly exposed state of the eye, and prescribed soothing remedies for the inflammation. The mother finally discontinued her visits at the institutions and clinics, since no physician had given her the least encourage-

ment, the child gradually became weaker and more emaciated, and died in a state of extreme emaciation in the beginning of July, 1887. The autopsy, which, from the opposition of friends, was only partial, was conducted by Professors Dana and Janeway.

*Remarks by Professor Janeway.*—"At the autopsy made by Dr. Dana my observations were not sufficient to localize accurately the positions of the tumors, it being supposed that Dr. Dana would take the affected portions away with him for subsequent study. Three tumors were found, each of the same structure, so far as the macroscopic appearances were concerned. The first tumor was found protruding from the right half of the cerebellum, at the point of entrance of the middle peduncle and a little posterior and inferior to it. It had a contracted, firm adhesion to the dura mater in the cerebellar fossa, and compressed the seventh and auditory nerves. The second was situated on the same side as the first, in the centre of the pons varolii. The third was on the opposite side of the brain, in the outer of the three gray portions making up the lenticular nucleus. These tumors had a thin, reddish-gray periphery, which blended with the surrounding parts. The centre was made up of cheesy matter. The brain-tissue surrounding them was not softened. They varied in size, but were about three-fourths of an inch in diameter, the surface being a little nodular. It was supposed that Dr. Dana would be able to obtain a piece of one of them for microscopic examination, but even this was prevented. I am sorry that, owing to the fact that I was obliged to leave before the autopsy was completed, and supposing that, as above stated, we should have a chance for subsequent examination when the specimens were hardened, I am unable to give further details. The variety of tumor is one which, judging from the macroscopic appearance, is usually denominated solitary tubercle."

*Remarks.*—It being impossible, on account of the strong, and even violent, opposition of the family to remove a portion of the tumors for microscopic examination, to the great regret of Dr. Dana and myself, we can only conjecture their exact anatomical character from their macroscopic appearance. They were probably specimens of neuroglia sarcoma (glioma), or of



tubercles as described by Cornil and Ranvier. That tumors of the brain now and then result from traumatism is the opinion of good observers. Eichhorst says ("Handbook of Practical Medicine," vol. iii.), "We are satisfied of the influence exerted by traumatism, although this was strenuously denied by Cohnheim."

In consulting the medical journals of last year for cases of intracranial tumors, I was impressed with the fact that tumors of the cerebellum are much more common than those of the cerebrum; at least, more cases of the former than of the latter have been reported. The symptoms which commonly result from cerebellar tumors will be seen by the histories of the following cases. In the *Journal of Nervous and Mental Disease*, April, 1887, Dr. E. C. Seguin relates the case of a boy who, at the age of ten years, fell upon his head. He was unconscious for a time, but rallied, without vomiting. Subsequently he began to have severe occipital pains and vomiting without nausea, and epileptiform attacks. Finally he lost his sight, and atrophy occurred of the optic nerves. He had deviation of the eyes to the left, right hemiparesis, without ataxia or anæsthesia, and his intelligence remained good. His death occurred at the age of fourteen years, preceded by ataxia of the upper extremity, vomiting, convulsions, and coma. The autopsy disclosed a sarcomatous tumor, situated at the inferior part of the right hemisphere of the cerebellum, and a cyst of clear contents occupying the anterior three-fourths of the same hemisphere. Dr. E. C. Seguin also relates the case of a man whose symptoms began at the age of eighteen years; he had headache, epileptiform or apoplectiform attacks, feeble sight, with atrophy of optic nerves, staggering gait (cerebellar titubation), without paralysis or ataxia of limbs. Finally he had partial left hemiplegia and bulbar symptoms (dysphagia, salivation, polyuria), ending in death. At the autopsy a cerebellar cyst was found, which had destroyed the middle lobe, a part of the lateral lobe, and compressed the fourth ventricle. Another patient, a boy of eight years, had frontal and occipital headache, double exophthalmus, tottering gait, undue enlargement of the head, separation of the sutures, and pseudo-paraplegia. Suddenly the exophthalmus abated, and a soft

tumor appeared at the lambdoidal suture. Sight, speech, and intelligence were preserved, and he had no anæsthesia or ataxia. At the autopsy a fibro-sarcomatous tumor was found situated in the left hemisphere of the cerebellum, developed in the lower part of the middle and anterior lobe, compressing the entire left cerebellar hemisphere, the aqueduct of Sylvius, and producing a hydrocephalus and hernia of the lateral sinus. In another case, a patient of twenty-eight years had severe attacks of headache, with nausea and vomiting, an ataxic gait, paresis of the right nerve of the sixth pair, diplopia, no impairment of vision, and no bulbar symptoms. He had diminution of sensation and loss of patellar reflex on the left side, and general feebleness. The post-mortem examination disclosed a sarcomatous tumor occupying the greater part of the right cerebellar hemisphere as far as the median line, compressing the surrounding tissues.

In the *Edinburgh Medical Journal*, January, 1887, Drs. Lisle and Bramwell relate the following interesting case: A man of twenty-four years became somnolent and had vomiting. This state continued two years. A little tottering occurred in his gait, followed soon after by frontal headache and impairment of memory and sight; pupils dilated and unequal; an optic neuritis was discovered. In the fourth year vomiting recurred, with clonic convulsions in both extremities of the right side; occipital cephalalgia and greater loss of consciousness. At the autopsy a tumor, gliomatous and cystic, of the size of an orange was found in the middle and right lobe of the cerebellum, and bound down by the tentorium cerebelli. It was remarkably vascular, and it presented traces of small interstitial hemorrhages. The cystic portion was evidently the result of an old hemorrhage. In the *British Medical Journal*, April, 1887, Dr. Hemming relates the case of a boy who at the age of twelve years had unilateral convulsions followed by slight paresis of the left side. The attacks were repeated, the intelligence diminished, and the body ceased to grow. Two years later he was unable to walk, and during the remaining four years of his life kept his bed. Before his death, which occurred at the age of eighteen years, there was complete loss of speech and the development of contractures of his lower ex-

tremities. The autopsy disclosed a cyst in the fourth ventricle, containing a yellowish serous liquid. It filled the whole ventricle and produced a depression in the brain.

In *Le Progrès Médical*, June, 1887, MM. Bourneville and Ischwall relate the case of a boy of five years who had scarlet fever followed by anorexia and attacks of vertigo, in which he said that the floor moved. Subsequently he had a fever which the attending physician designated cerebral, strabismus of the left eye, urinary and fecal incontinence, paralysis of legs, etc. At the autopsy a little liquid flowed from the cranial cavity; pons varolii notably enlarged, soft, and almost fluctuating. It was filled with a mass of an encephaloid appearance, yellowish white, generally friable, but hard and resisting in points. Under the microscope giant-cells were found, and cheesy degeneration had occurred. Tubercles were present in the lungs. In the *Arch. de Physiol.*, 1870, M. Parrot relates the case of a boy, aged one year, the right side of whose face was less developed than the left, and his mouth was drawn to the right; external strabismus and dilatation of pupil of right eye; paralysis and contraction of left extremities. During the five days preceding death he had vomiting, wasting, and increase in the facial hemiplegia and contractures. Autopsy: In the interpeduncular space a tumor of the size of a pigeon's egg, pressing upon the right side and base of the pons varolii; granulations in the meninges and gray substance. In the *Bull. de la Soc. Anat.*, 1877, M. Martin relates the following interesting case: L. I., aged six years, had weakness in all his limbs; slight ptosis of left upper eyelid and internal strabismus of left eye; equal pupils; complete left facial hemiplegia. Autopsy: A cheesy mass, filling almost the left lobe of cerebellum, and a tumor in the left half of the pons. MM. Bourneville and Ischwall also relate the following case (*Le Progrès Médical*, June, 1887): A boy, aged two and one-half years, with right facial hemiplegia and strabismus, and paralysis of left arm and leg, with slight contraction of former; softening of right cornea; cough, dysphagia, vomiting. Autopsy: A large crude tubercle in the right half of the pons varolii; a tubercle in the right cerebral hemisphere; ventricular dropsy; granular meninges. The same authors quote from the thesis of Koechlin the case of



a boy two and one-half years old who had exophthalmus, left facial paralysis, left internal strabismus, and paralysis of the right extremities. Autopsy: A crude tubercle of the pons and the bulb. M. Candelle (Paris, 1874) relates the following cases: A girl of six years had vomiting, constipation, cephalalgia, strabismus, tonic contraction of limbs, and finally stertor. At the autopsy she was found to have tuberculosis. A tubercular tumor occupied the inferior part of the right lobe of cerebellum, and another tumor was found on the anterior aspect of the pons and a little to the right side. A boy of two and one-half years had for some time purulent discharge from both ears, convergent strabismus, paralysis of right arm and leg. The autopsy disclosed two intracranial tumors of the kind designated solitary tubercles, one in the left half of the pons varolii, rendering it very prominent, and another in the left occipital lobe. G. M., age seven years; father phthisical; right pupil contracted; left dilated; divergent strabismus of left eye; paresis of right half of palate; hemiplegia; spastic rigidity of left upper extremity; vomiting and coma, followed by death. Autopsy: Pons varolii and medulla oblongata contained tubercular masses, which by their presence and pressure changed the appearance and disturbed the functions of these important portions of the encephalon.

The records of the above fourteen cases of tumors in or upon the cerebellum, pons varolii, and medulla oblongata are sufficient to show what symptoms may be expected from morbid growths encroaching upon and disturbing the functions of these important portions of the cerebro-spinal axis. The symptoms, some of which were present in each of these cases, were as follows: Cephalalgia, occipital or frontal, or both, vomiting, epileptiform seizures, loss of sight and atrophy of optic nerves, strabismus, hemiparesis, hemiplegia, staggering gait (cerebellar titubation), dysphagia, exophthalmus, diplopia, loss of tendon reflexes, dilatation and irregularity of pupils, clonic convulsions, impaired consciousness, ataxia, loss of speech, contractures of extremities, vertigo, urinary and fecal incontinence, ptosis, softening of cornea, constipation. Of course, the symptoms vary according to the size, seat, and rapidity of growth of the tumor, and several of the symptoms

enumerated above are known to occur in diseases of other parts of the brain besides the cerebellum, pons, and medulla. But if several of these symptoms are present, with but little impairment of intelligence, and especially if occipital headache be a prominent symptom, the presumption is strong that the morbid growth is located in or upon the cerebellum, pons, or medulla, so as to restrict or disturb the functions of these important organs.

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## KEPHIR, AND ITS USE AS AN INFANT FOOD.

BY H. LONGSTREET TAYLOR, A.M., M.D.,

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DURING my five months' term of service at the Home for the Friendless and Foundlings, just ended, I have not had a single death from marasmus, which is usually of such frequent occurrence among foundlings and illegitimate children. The difficulty of bringing about a change in the state of nutrition of atrophic children in public institutions, many of them with hereditary taints and suffering from the exposure and bad treatment which they have undergone before being placed there, is a question familiar to all interested in their care. I attribute this immunity from fatal cases of malnutrition, referred to above, to the liberal use of kephir during that time.

Eustace Smith says that with proper care in feeding deaths from marasmus should not occur; but it is difficult to understand upon what grounds such a statement could be made if it was intended to include that class of forsaken and illegitimate children that are treated in foundling asylums. It is certainly impossible to bring many of these cases of profound infantile atrophy to a state of health, yet by scientific feeding much can be accomplished in a certain proportion of apparently desperate cases. The remainder are hopeless cases, and go on steadily downward in spite of everything that can be done for them. In calling the attention of the profession to a plan of feeding not in general use, it is only with the pur-

pose of putting another weapon into their hands, not with the pretence of giving them a magician's wand.

As the power of the digestive apparatus of these subjects is at its lowest ebb, not much can be expected from it, and consequently it is the most scientific method to have recourse to predigested food. The experience with the digestive ferments, as in peptonized milk, peptogenetic milk powder, etc., as well as with the numerous farinaceous foods, which are, as a rule, liberally supplied with malt to digest their starchy matters, has been very unsatisfactory. Theoretically, the peptonized milk should be an excellent infant food, but practically the digestion is carried on too far or injurious ptomaines are introduced with the organized ferment used in preparing the food, which the child cannot eliminate. In one case in which the peptonizing was controlled with scientific accuracy, by testing a small portion in a test-tube with muriatic acid at short intervals, and at once stopping the process when the curding was in fine flakes, the peptonized milk gave very satisfactory results. But this success was not obtained in other cases, even with equally careful preparation.

Under these circumstances I gladly accepted the opportunity, which was offered last summer, of observing the action of kephir in Professor Freund's gynæcological and obstetrical clinic in Strassburg. All of his cases were kept upon it for a week or ten days after severe operations or labors, and it proved to be a most excellent and readily-assimilated food for these patients. Professor Kohts was also using it to a slight extent among a few of the older children in his wards.

Apparently the kephir fermentation solves the problem of a predigested food for infants. As digestion itself is but fermentation, if an analogous fermentation can be produced in the milk, it will be rendered more easily assimilable, without at the same time introducing either ptomaines or pathological micro-organisms into the digestive tract, and real benefit may be expected from its use. The kephir fermentation does this; as its result we find the thick coagulation of cow's milk broken up into innumerable fine flocculent particles, the albumen changing into peptones and the sugar of milk into lactic acid, alcohol, and carbonic acid gas.



The difficulty of producing a fine division of the curd of cow's milk has always been the insurmountable objection to its use as a food for infants. In peptonized milk it is also accomplished, but there are objections to its use which have been stated.

The first steps of the digestion of milk are carried out in the kephir fermentation. The thick, hard curd disappears, and fine flakes, presenting a thousandfold greater surface to the solvent action of the gastric juice, strengthened by the addition to it of the lactic acid developed in the fermentation, take its place. The presence of the lactic acid has a germicidal action upon a large class of micro-organism and thus acts as a purifier of the milk.

The small percentage of alcohol acts as a gastric and general tonic, while the carbonic acid gas has a beneficial effect upon any chronic catarrhal process of the mucous membranes.

Immediately upon my return in September I began its use among the foundlings and atrophic mothers' babies in the Home. The observations extend over a period of five months, during which time from four to six quarts were taken daily by the selected cases, while the other infants were fed according to other plans. It was first used on a few apparently hopeless cases of atrophy due to chronic dyspepsia, gastrointestinal catarrhs, and congenital diseases. Upon those cases that were kept steadily on kephir, without any other food, its action was about as follows: At first a salutary diarrhœa sets in that empties the bowels of their partly-digested contents, which is followed, usually without treatment, by normal stools in a few days. A small number refused to take it, and the attempt to feed them upon it had to be abandoned. Nearly all required a little coaxing for the first few meals, but they soon became very fond of it and preferred it to cow's milk or other foods. By the end of the first week the dry, harsh skin of the little sufferer from infantile atrophy begins to act normally and to have a better color. The prominent abdomen is greatly reduced in size. The stools have a darker color than when milk is taken. The appetite improves and the infant takes twenty-five per cent. more food than has been its wont. The action of the kidneys increases; but this is probably due

to the additional quantity of fluid taken. This was not accurately determined, but it was noticed that the diapers were more frequently wetted than formerly. By the end of the first week but little change takes place in the weight. It may even have fallen slightly, due probably to the unloading of the bowels. Some cases, however, show a gain. During the second week the gain continues or begins, except in some extremely emaciated children. Even these look better, have a moist, healthy skin, brighter eyes, and an improved appetite, but it takes a long time before they begin to grow fat. If, as is usually the case, their weight has been gradually growing less, this loss soon ceases, but the first gain may be observed only after three or four weeks. In a recent publication Monti advises that but one or two meals of kephir should be given daily, but my experience has been that the greatest benefit is derived from its continuous use for a period of at least six weeks, and if the infant's condition has not greatly changed for the better at the expiration of this time, it should be given still longer. When the state of malnutrition no longer exists, when a thick deposit of adipose tissue has rounded off the angular form and filled out the sunken cheeks, then kephir may be abandoned, and as the condition has so greatly improved, milk and barley-water or one of the farinaceous foods will be found to be well digested, and the gain in weight and strength will be seen to be continuous.

Infants that have a chronic diarrhœa, with large, undigested stools, do well on kephir, especially if a little rhubarb and chalk is given for the first few days. It is a food that they can digest, and hence the irritation of non-digested substances is removed from the alimentary tract. Several cases of this kind recovered without medicines of any kind.

Three infants have been taken from the breast of mothers whose milk did not agree with them, and have improved marvellously on kephir. .

The kephir given to young infants should be in the first stage of fermentation, the weak or young kephir. It may be given lukewarm, but should never be heated beyond that point. It is best to use it at a temperature of about 75° F. If it is desired to allay vomiting the bottle should be kept on ice.

The fact that kephir is the product of a fermentation in milk to which nothing but the ferment has been added should not be lost sight of, and it should never be confounded with those imitations of koumiss, to be had in most markets, which are made by adding a quantity of sugar and bread yeast to the milk. The resulting product is far from uniform, and the casein is not divided in fine flakes, but is generally found in lumps. Adults do not bear it as well as they do kephir when they are suffering with digestive disorders.

Koumiss has fallen into disuse and but little is seen about it in the medical literature of to-day; not because it has no virtues as a food, but because it is impossible to supply a market with an article as rare and expensive as mare's or ass's milk, in a perishable form, and at a price that could insure its general use. The variable demand, too, is a great obstacle to its profitable manufacture. Neither koumiss nor kephir should be used after they are a week old. Koumiss was at one time manufactured in a few places and shipped all over Western Europe. Consequently, when it reached the consumer it was too old and sour to be used, and hence it soon fell into disrepute. The surrogates in our markets have not the virtues of the original, and as a rule are much too old for use when sold. In kephir an article is offered to the medical profession that possesses all of the virtues of genuine koumiss without its disadvantages. Kephir can be made anywhere, but the profession should see to it that it is not used after it has become too old and sour. In this condition it is neither palatable nor digestible, and its use can but end in disappointment. It should be made by some one who thoroughly understands it, and not in private houses. The attempts in Europe to have patients ferment their own kephir have not been successful. There are establishments in many of the cities of Germany and Switzerland whose business it is to keep a supply of freshly-fermented kephir, which is often sent quite a distance by express. From the extensive use being made of it throughout Germany the estimation of its true value will soon be determined. The publications by those who have used it agree in regarding it as a food of the greatest value in all anæmic and debilitated conditions, its



greatest recommendation being in its blood- and fat-producing qualities.

Kephir has proved to be a valuable food in typhoid fever of adults, and as its action in these cases illustrates its physiological action in general it may not be inappropriate to refer to it. The patient finds in it a refreshing drink, acid and effervescing. He calls for it frequently to relieve his thirst, if he is in a condition to do so, and thus easily takes quite enough nourishment in the course of twenty-four hours. The lactic acid assists the weakened stomach digestion and renders the administration of any hydrochloric acid unnecessary. The urine, formerly high-colored, scanty, and burning, becomes of a normal color and greatly increased quantity. The necessity for the stronger alcoholic beverages is not nearly so great as when milk is the main food. The general nutrition of the patient and his strength can thus be better supported, because the two or three quarts of kephir that he manages to consume in the course of twenty-four hours is food in a form so easily assimilated that he secures its entire benefit.

To sum up, the following directions should be observed in the use of kephir as an infant food :

1. If the infant is less than a month old give it diluted one-third with water. This proportion may be gradually lessened until at from four to six weeks of age it is given undiluted.

2. It should be fed slowly from a simple, easily-cleansed nursing-bottle.

3. When used it should constitute the only food, except in children over a year of age, when crackers, toast, etc., may be given with it, and one meal a day can with advantage consist of oatmeal mush or other farinaceous food.

4. For young infants it is best adapted when given in its young or weak state. As the child grows older the medicine or even the old kephir may be used.

Its greatest usefulness is in cases of infantile atrophy and of chronic diarrhœa, and it will undoubtedly prove to be a valuable addition to our resources in the care of hand-fed infants.

A RÉSUMÉ OF RECENT VIEWS CONCERNING  
ICTERUS NEONATORUM; AND ITS RELATION  
TO SEPSIS.\*BY ANDREW F. CURRIER, M.D.,  
New York.

THE term *icterus* is an illustration of that unfortunate tendency in medical terminology to label a disease according to the symptom that strikes the eye first or most forcibly. It seems to have been the weasel with the yellow eyes (ἰκτις) which suggested to the ancient observers a name for their jaundiced patients, and it was but natural for them to call that bird *icterus* which was supposed to give up its life when looked upon by a jaundiced person, the latter being healed as the result of the view. If we must accept the term *icterus neonatorum* we must admit that it covers a multitude of cases and conditions, and includes many degrees of yellowness. The simpler cases are familiar to every man who practises obstetrics and is at all observant; the serious cases are comparatively rare and are seen, or at any rate reported, principally by those whose experience in the diseases of infants and children is extensive. *Icterus neonatorum* is usually observed as early as the second or third day of life, Kehrer's statistics showing that sixty-three per cent. of cases occur on the second, twenty-four per cent. on the third, and only ten per cent. after the tenth, and Baginsky has stated that the discoloration begins upon the face and breast, and extends to the abdomen and extremities, the ocular phenomena being also among the later symptoms. The hue of the skin varies from a bright yellow to a dark orange, according to the primary tint of the skin, the intensity, and the particular stage of the disease. The intensity of the disease also regulates the degree of yellowness of the urine and the consistency and color of the fæces, at least in

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\* Read before the Section on Pediatrics of the New York Academy of Medicine, Wednesday, March 28, 1888.

those cases in which the condition is due to biliary disturbance. There are certain anatomical and histological considerations referring to the liver and the vascular system in the new-born which are preliminary to a study of this disease. Frerichs found the weight of the liver in the seven months' fœtus to be one-seventeenth of the weight of the entire body; and in the fœtus at term one-twenty-eighth to one-twentieth. In a child one and one-third years of age, it was only one-thirty-third. It is larger in the mature fœtus than both the lungs (Beneke, Baginsky), and the functional importance must be very great even if we consider alone the fact that it holds a quarter or more of the volume of blood in the body. When the placental circulation is ended, great changes in the blood must necessarily take place; the functions of the umbilical vein and the ductus venosus are fulfilled, the current of the blood is altered, and the blood itself is more perfectly oxygenated. The importance of the lungs as an element in the circulatory system is augmented and that of the liver is diminished. The red corpuscles, which number six to seven millions per cubic centimetre on the first day of life, are found to number only four to five millions on the fourth or fifth day. Hofmeier found (*Ztsch. f. G. u. G.*, xiii. 2), (1) that the size of the red corpuscles was very variable; (2) that they were more spherical than in the blood of adults; (3) that they showed no tendency to form *rouleaux*; (4) that the white corpuscles are often in greater proportion than in adults' blood; (5) and that they accumulate in *rouleaux*; (6) that they are viscid, deliquescent, and easily destroyed. Ponfick found in the blood of the new-born an abundance of ring-like forms, which proved to be only the shadows or skeletons of the red corpuscles, the coloring-matter having disappeared. Silbermann found (*Jahrb. f. K.*, xxvi. 2) that these shadows were the more abundant the more disturbed was the child's general condition during the first few days of life. In this connection an important question arises as to the significance of hæmoglobin in tissue-changes and the effect which it has upon the organism after its release from the stroma and transfer to the plasma. Hæmoglobinuria is not inevitable, but should it occur, Schmidt maintains that the circulating blood will contain a relatively



large quantity of fibrin ferment, red and white corpuscles having contributed it in abundance as the result of their destruction. Silbermann injected hæmoglobin into the blood of frogs, dogs, and puppies, and found that the resulting conditions in the blood, urine, and liver corresponded with those which were found in new-born infants during the first few days of life. He therefore concluded that during this period there is a great destruction of red corpuscles, which results in the liberation of free hæmoglobin; that this result is followed by hæmoglobinæmia and an increase of fibrin in the blood, especially in the venous circulation, as is shown by venous stasis and hyperæmia. The condition of the blood in the new-born (Silbermann continues) is therefore such as to predispose them to disease, and should this predisposition be encouraged by the coexistence of asphyxia, omphalitis, syphilis, gastric and intestinal catarrh, and erysipelas, the consequences may be fatal. If these diseases do not coexist the liver will, in the course of a few days, convert the liberated hæmoglobin into biliary coloring-matter, and this will be eliminated to a certain extent with the fæces and urine. Silbermann concludes, therefore, that: (1) The blood of the newly-born contains corpuscles which vary greatly in size, and also the so-called *shadows*. (2) It is richer in fibrin ferment than is the blood of adults. (3) These peculiarities are due to the liberation of hæmoglobin and its transfer to the plasma. (4) The richness in fibrin ferment of the blood of the newly-born predisposes them to disease. (5) All disease-processes in the newly-born which involve great destruction of the albumen of the circulation are especially dangerous to life. These facts, therefore, the great size of the liver, and its consequent capacity for holding blood, the abolition of the umbilical vein and ductus venosus, the channels by which the placental circulation is maintained, and the degenerative changes in the blood, which always occur, however much or little they may be modified by delay in ligating the umbilical cord until all pulsation in it has ceased, in accordance with the recommendations of Schücking, Budin, and Engel; these facts, I say, enable one to understand why morbid conditions which are traceable to the liver occur so frequently during the first few days of life. The

question whether these conditions are hæmatogenous or hepatogenous has been debatable ground and differently decided by the most experienced and competent investigators. No recent writer has offered a more intelligent contribution to this subject than Hofmeier (*Ztsch. f. G. u. G.*, xiii. 2), who believes that all of his predecessors have expressed too much confidence in that which is unproven, or that they are one-sided in regard to individual phenomena and local processes. He found as the result of extensive investigations upon icteric children during the first ten days of life, that they showed during the first few days a decided loss of weight and a great increase in the elimination of urea, uric acid infarcts, and albumen. There was also, as a constant element, a yellow coloring-matter in the urine, the quantity of which varied with the intensity of the disease. The loss of albumen and red corpuscles was plainly evident in the blood, and the longer the icteric process continued the greater was the destruction of red corpuscles. With this destructive process was also associated an active constructive one in the production of new corpuscles. Hofmeier also recalls the fact in this connection that the discharged coloring-matter of the bile is a derivative of the coloring-matter of the blood, and that when intestinal digestion begins the secretion of the bile, which is rich in pigment, is greatly increased. Certain anatomical conditions favor the passage of bile into the blood at this time, and the final result is icterus, with its symptoms, which will be regulated by the development and nutrition of the child. The theory of Frerichs in regard to the origin of icterus neonatorum, the so-called *resorption theory*, is well known. Briefly stated, it is that when the placental circulation is cut off the pressure in the portal capillaries is greatly diminished. With this diminution in tension there is a corresponding increase in tension in the bile capillaries, which is intensified by the increased secretion of bile which takes place when extra-uterine life begins. This results in effusion of bile, which is followed by absorption of the same by the lymphatics or the veins of the liver, and the blood is consequently highly charged with bile in a short time, though, aside from these conditions of stasis, there may have been no mechanical obstruction. The bile has the power of dissolving the red corpuscles, as Perls

has shown (*Lehrb. f. Allg. Path.*, i. p. 222, 1877), of depressing the temperature and the heart-action, and of paralyzing the activity of the muscles and the ganglion-cells. Perls does not believe in the accumulation of cholesterin in the blood, with consequent cholæmia or cholesterinæmia, as maintained by Austin Flint. Silbermann, whose investigations concerning the hæmatology of the new-born were supplemented by those concerning icterus (see *ARCH. OF PED.*, January, 1888, p. 60), concludes that: (1) *Icterus neonatorum* is icterus of resorption, and, therefore, hæmatogenous in character: (2) The biliary engorgement is seated in the biliary capillaries and interlobular bile-ducts, which are compressed by the dilated branches of the portal vein and the capillary blood-vessels of the liver. (3) This engorgement in the vessels is effected by a change in the circulation of the liver, occurring soon after birth, which is one of the indications of a change in the blood-plasma. (4) This change, which is induced by the destruction of many blood-corpuscles soon after birth, consists in a kind of blood-fermentation. (5) The more feeble the infant the more intense will be the icterus, for in such a child the destruction of corpuscles and the consequent blood-changes will be much more decided than in a vigorous child. (6) As a consequence of the destruction of so many red corpuscles, there is abundant material for the formation of biliary coloring-matter, and under the influence of the fermentation process alluded to this coloring-matter accumulates for a long time and in considerable quantity in the hepatic vessels. The theory of Birch-Hirschfeld is that after birth a decided change in tension in the capillaries of the liver takes place, leading to œdema of Glisson's capsule. This is followed by effusion of bile and subsequent absorption, with the phenomena of icterus. F. P. Henry (*ARCH. OF PED.*, 1884, p. 64) examined on successive days the blood of four new-born infants, and found in each case great and rapid diminution in the number of red corpuscles. In one of the cases there was deep jaundice, in two others only slight discoloration, while in the fourth there was none. He concluded that the jaundice was not hæmatogenous, but was due to sudden diminution in the portal blood-pressure from ligature of the umbilical cord, and was therefore hepatogenous or me-



chanical. He also believed that the degree of disturbance was regulated by the freedom of anastomosis of the veins of the umbilicus with the cutaneous veins of the abdomen and the vigor of the cardiac contractions. Ashby based his opinion as to the etiology of this disease (see ARCH. of PED., 1885, p. 566) upon the theory of Quinke, that if the ductus venosus remained open, or remained open for some time after birth, icterus would result on account of the passage of a portion of the portal blood, containing bile, directly into the general circulation. If this theory were true it would explain, in Ashby's opinion, the fact that weak and immature children are more liable to jaundice than others, because with the former he believed that the duct would be larger at birth, and would remain open longer than with those who were more robust. He reports a case in which jaundice occurred on the second day of life, and still existed on the eleventh, when the infant died. In this case the ductus venosus was widely dilated. To the foregoing theories and opinions may be added those of West, who attributes the disease to exposure to cold or to a vitiated atmosphere; Frank, who considers that it may be caused by prolonged retention of meconium; Cohnheim, who thinks that resorption of bile is due to its too abundant secretion immediately after birth to be disposed of by the ordinary channels; and Schüppel, who refers to syphilitic new growths in the liver and resulting peripylephlebitis, which may cause severe or even fatal icterus. (See *London Lancet*, 1887, ii. 102.) We must not forget, also, that there are cases of icterus which are persistent and irremediable, in which the fault lies in malformation or deficiency of the bile-ducts. A paper upon this subject was read before the Section on Practice of Medicine of this Academy, November 15, 1887, by Dr. John B. White (*Am. Jour. Obst.*, January, 1888, p. 48), in which he was able to report eighteen cases of this character which he found recorded. It will readily be seen that none of these theories are sufficiently comprehensive to explain the etiology of icterus neonatorum in general, and it is not an easy matter to harmonize the views which have been promulgated, if, indeed, that were possible. The following facts, however, seem to be pretty clearly established: (1) With the completion of foetal

life and the termination of the placental circulation extensive changes in the blood of the infant always take place. (2) These changes are degenerative, and *are* much more marked in immature and feeble infants than in those who are robust. (3) The external evidence of these changes appears in the form of icterus, which, in the greater number of cases, is of brief duration, and is not accompanied by symptoms indicating serious constitutional disturbance. (4) In those cases in which the icterus is profound and persistent serious results are to be expected, for the condition is not caused by the ordinary degenerative changes in the blood-corpuscles which always follow the ligation of the umbilical cord. (5) Among the causes which are followed by severe or fatal symptoms are,—

(a) Non-closure of the ductus venosus (Quincke's theory).

(b) Defects and malformations of the bile-ducts (as in the cases collected by White (*l. c.*)).

(c) Œdema of Glisson's capsule (Birch-Hirschfeld's theory).

(d) Weakness of the heart, especially its right side, pulmonary atelectasis, insufficient anastomoses of the veins of the umbilicus with the contiguous veins of the abdomen, syphilitic and other new growths, malformations and deformities of the liver, and other causes which lead to insufficient tension in the subdivisions of the portal vein, with consequent stasis, effusion of bile, and resorption into the circulation, either directly by way of the hepatic veins, or indirectly by way of the lymphatics.

A consideration of the foregoing facts brings us back to the original starting-point and to the conclusion that some forms of icterus must be due to mechanical causes,—that is, they are of hepatogenous origin, while others are due to chemical or hæmatogenous causes. There is no theory which will apply uniformly to all cases. The relation of icterus to sepsis depends largely upon the conception which one has concerning sepsis. If we understand by sepsis the disturbing influence which is produced upon the body and its functions by microbes of decomposition which are conveyed to it from without, and through the medium of a wound surface, there are undoubtedly certain cases of icterus in which sepsis plays an important part. These cases will be considered presently. In by far the greater number of cases of icterus, those in which the symp-

toms are only a yellow or orange discoloration of the skin and mucous membranes, there is no sepsis. The functions are properly performed, the fæces are of a normal yellow color, the urine is without bile-pigment and bile-acids, and the condition is merely a hæmoglobinæmia, which, as Silbermann says, is physiological within certain limits. In other cases in which the icterus is more profound, the stools are hard and of gray color, the straight tubules of the kidneys contain bilirubine infarcts (Perls, *l. c.*), and if stasis is complete, or nearly so, the fæces are always almost or entirely without bile, gray in color, contain undigested fat, and smell badly, and the urine will contain not only biliary coloring-matter but bile-acids. The evidences of constitutional disturbance in such cases are decided, but there is nothing which indicates the presence of pus in the system; there is undoubted hæmoglobinæmia or cholæmia or toxæmia, but no evidence of sepsis or septic infection. The umbilicus has a healthy appearance, and there are none of the ordinary symptoms of phlebitis, though the cases may continue to a fatal issue. In the third class of cases the conditions are different. The skin may or may not be decidedly yellow, as is the case in septicæmia at any other period of life; there is great constitutional disturbance, with high temperature, dry tongue, and tender and swollen belly, and there may be chills and abscesses in the parenchyma of the liver and elsewhere. The umbilicus is swollen and ulcerated, and pus or blood exudes from the umbilical arteries or vein, or from both. Vogel says that infants with such symptoms seldom live beyond the nineteenth day from birth. ("Lehrb. der Kinderh.," 8th ed., p. 67.) This is evidently the condition which Schüller calls *icterus malignus*, and which is referred to by Eustace Smith in the article on *icterus neonatorum* in his text-book ("Dis. of Chil.," Wood & Co., 1884). Birch-Hirschfeld found in the discharges from the umbilicus both rod and spherical bacteria. Schüller and Vogel both observed that such cases coexisted with puerperal fever, and it is reasonable to believe with them that in both mother and infant the disease is due to the same element of infection. It seems to me, therefore, that a very clear and broad distinction can be made between those cases of icterus which are caused by an excess of hæmoglobin



in the blood, those which are due to a resorption of bile, and those which result from septic elements and conditions. The last are simply cases of septicæmia, which may or may not be accompanied with intense jaundice; the others are cases of toxæmia in the sense that the blood either contains a substance which is abnormal to it (the bile) or an excess of a normal element (the hæmoglobin). The reference of Silbermann and Schmidt to any fermentation process which may occur in the blood in connection with cases of non-septic icterus is unfortunate and misleading, for, if it exists at all, it is not such a process as occurs in icterus from sepsis, certainly with reference to its results.

159 EAST THIRTY-SEVENTH STREET.

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## Current Literature.

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### I.—HYGIENE AND THERAPEUTICS.

Knaggs: Sulphur in Diphtheria. (*Ther. Gaz.*, March 15, 1888.)

The treatment of diphtheria by pulverized preparations of sulphur has been in vogue for upwards of thirty years.

All European observers who have had any experience of this method of treatment speak decidedly as to the great utility and specific properties of this mineral in combating the ravages of diphtheria. Opinions are, however, conflicting as to the most appropriate manner in which it should be exhibited. Insufflation, topical application, or gargles of the drug suspended in water or other menstrua, and the internal administration of sulphur have their respective votaries.

It is the writer's belief that insufflations are of the greatest service in diphtheria, but he does not himself use them unless the posterior nares, or nasal cavities, have become implicated by extension of the fungoid growth from the throat. He has found the internal use of small doses of sulphur suspended in a viscid mixture to answer every purpose, with the least possible amount of distress to the patient, and with equally uniform certainty. If administered at very frequent intervals, and slowly swallowed or sipped, such a mixture plays the

same part as the insufflated powder. It clings to and acts upon the leathery growths in a like manner.

He has found glycerin the most satisfactory vehicle for the exhibition of this remedy. His formula is,—

Precipitated sulphur (pure), ℥iss;  
Chocolate powder, ℥i;  
Cinnamon-water (concentrated 1 in 40), f℥i;  
Glycerin, to make ℥iii.

Mix powders together in mortar, then gradually add glycerin, with constant trituration, and lastly, add the cinnamon-water. If kept tightly corked this preparation will keep for a long time.

Sig.—Half to one teaspoonful to be taken every hour or oftener. The dose should vary according to age of patient.

Corbin: Mercurial Fumigations in Laryngeal Diphtheria or Diphtheritic Croup. (*N. Y. Med., Jour.*, March 10, 1888.)

The writer believes that the only way in which sufficient mercury can be introduced into the economy to control diphtheria is by having the volatilized drug taken directly into the circulation through the medium of the lungs.

He has treated sixteen cases by this method, with three fatal terminations, and mentions equally successful results obtained by other observers. The details of treatment are: sunny room, with temperature not below seventy-five degrees, and air kept moist by evaporation of water. During time of fumigations patient receives no medicine whatever. At beginning and end of a fumigation, milk-punch or wine is given. A child's crib with barrel-hoops across top, secured, and over these spread a flannel blanket, makes a suitable canopy or tent. In the case of a child eight or ten years of age he volatilizes from forty to sixty grains of the mild chloride. Removes canopy at end of twenty minutes. This is repeated every two or three hours during first day. After this he prolongs intervals of fumigations, and at once resorts to them if cough again tightens. He has had cases where they had to be continued for over a week, but not more than two or three each day. Let patient receive the most thorough alimentation. The lamp had better be powerful enough to volatilize a drachm of calomel in one minute. By this means the air of tent is not raised to too high a temperature for respiration.

Mosetiz-Moorhof: The Treatment of Burns. (*Arch. f. Kinderh.* [abstracted], ix. 2.)

The author's paper treats in the briefest and most forcible manner the general symptoms which attend these accidents, referring especially to the theories of Catiano, Sonnenburg, and

Torr. With these authors he attributes the severe symptoms following extensive burns and leading to a fatal issue to oligocythæmia. If this latter condition is only of moderate intensity, the blood is gradually adjusted to the situation, the destroyed elements being eliminated through the kidneys, and new cells being formed. In the severer grades of oligocythæmia the only rational treatment consists in depletory transfusion. The pain which is caused by the burns, and the danger of decomposition of the wound secretions, are conditions which call for treatment in addition to the oligocythæmia. After having tried various agents to answer both these conditions, the author reached the conclusion that this object was best attained by the use of iodoform, for this is not only antiseptic, but anodyne also to a remarkable degree. For burns upon the face an iodoform ointment, 1 to 20, is recommended, for burns upon the body and extremities iodoform in powder, or iodoform ether, with a covering of rubber tissue over the entire burned area, and a bandage over that. This treatment has given the author very good results, and no intoxication need ever follow if proper precautions are used. Of forty-eight patients who were treated in this manner seven died, but their burns were so extensive as to preclude the idea of recovery. In all of these cases, however, death was unattended by pain or suffering. It is believed that the application of iodoform to injuries of this character will prove a means of treatment of the greatest value.

A. F. C.

Ehring: The Mechanical Treatment of Gastro-Intestinal Catarrh in Infants. (*Jahrb. f. K.*, xxvii. 3.)

It is only within a short time that the plan of washing out the stomach, which was inaugurated by Kussmaul for diseases of that organ in adults, has been applied to children. The author has had opportunity to test the value of the method in eight hundred and fifty cases of gastro-intestinal catarrh, and to compare its efficiency with the customary means of treatment by diet and medicine. The result has been in favor of the former, and he therefore urges its general use. The difficulties connected with its application are few and easily overcome, and the dangers, even for the youngest and weakest infants, easily avoided. The method was first advocated for disease in children ten years ago by Baginsky, Demme, and Epstein, and since then has been approved or disapproved by the various writers on pediatric subjects. Kussmaul's apparatus for irrigating the stomach consists merely of a Nélaton catheter, a long rubber tube, and a funnel, and this simple apparatus will accomplish all that is necessary. Escherich's



apparatus has greater advantages, however, and is preferred by the author. It consists of a graduated glass irrigator, to which is attached a rubber tube one and a half metres long. In the lower opening of the latter is inserted a Y-shaped glass tube by its perpendicular bar. To one of the branches of the Y a Nélaton catheter is attached (size 8 or 10) for insertion into the stomach, and to the other a rubber tube, one metre long, to carry off the injected water and contents of the stomach. A cock is attached, both to the tube which bears the fluid to the stomach and to that which carries it off, and when one is open the other remains closed. The stomach is evacuated by siphon action. In performing irrigation of the stomach the irrigator is hung upon the wall, at a height of five or six feet, and over the chair upon which the mother or assistant sits holding the child in her left arm, the child being in a half-sitting position, with his head bent forward upon her chest, and relieved of all superfluous or tight clothing. The operator then depresses the child's tongue with two fingers of his left hand, with his right hand guides the tube down the œsophagus; this tube is then steadied by the one who holds the child, and the operator regulates the flow and discharge of the fluid by means of the cocks. The tube in the throat and stomach gives very little trouble, even to the youngest infants. For children a few weeks old only fifty to seventy grammes of fluid should be used for each irrigation. In a short time this quantity may be increased to one hundred or two hundred grammes without exciting vomiting. The catheter should be moistened with oil, albumen, or water before it is introduced into the stomach. The advantages of this apparatus are:

1. It obviates the necessity for an assistant to hold up the funnel and pour in water.
2. Its use is not accompanied by the introduction of air into the stomach, which must attend the use of the tube and funnel, and result in dilatation of the stomach and interference in emptying it.
3. Its advantages on account of the very short time necessary for irrigation by means of it are sufficiently obvious.
4. It is cleaner and less troublesome to use than the tube and funnel.

The time required for irrigation of the stomach is usually four or five minutes, from half a litre to a litre and a half of water being usually required before the return flow is clear. Plain water, at the temperature of the body, should first be used, and afterwards a smaller quantity of a suitable antiseptic solution may be injected, part of it being allowed to remain in

the stomach, especially in those cases in which a fermentative process is present. If there is gastric or intestinal catarrh, a few drops of a six-per-cent. solution of benzoate of sodium and a few drops of tincture of opium may be given hourly after each irrigation. Irrigation is contraindicated only in very feeble children and when collapse is impending. The same apparatus is also used for intestinal irrigation, excepting that a larger and stiffer catheter, with much larger lateral openings, is employed. It may be introduced, if necessary, to a distance of twenty-seven centimetres, and the entire large intestine thoroughly washed out. The best position for irrigating the intestine is the knee-elbow, but as this is impossible in very small children, the dorsal decubitus is recommended, with an inclination to the right side. As to materials for irrigation, the same plan is to be followed that was recommended for irrigation of the stomach. The indications for this treatment exist in all cases of intestinal catarrh. The result of the author's experience has been rapid cure in 68.7 per cent. of cases, moderate success in 14.58, failure or death in 16.73. It must be remembered, however, that many of the cases in the last-mentioned class were in very bad condition when treatment was begun, and would probably have been fatal under any treatment.

A. F. C.

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## II.—MEDICINE.

Northrup: Reptilian Heart. (*Med. Rec.*, March 31, 1888.)

The writer reports the result of an autopsy on a child who died of cyanosis at the age of one month.

The heart consisted of one auricle, into which emptied two veins, the superior and inferior vena cavæ, and one ventricle giving off one artery, the aorta. The ventricular walls were of uniform thickness, showing, without, an intraventricular groove, and within, a ridge of rudimentary septum. The auricle presented externally the usual outline of two auricles with their appendices. Within there was a thin triangular membrane, having the location and appearance of an enlarged Eustachian valve; otherwise there was no attempt at partition. The superior vena cava opened by a valve-like orifice to the left of the rudimentary septum, corresponding nearly to the usual position of the pulmonary veins. The inferior vena cava opened in its normal position at right of base of Eustachian membrane.

The pulmonary artery was represented by a fibrous string attached to the base of heart in the angle formed by right auricle and origin of aorta. Its orifice had no rudimentary trace, and its trunk, as far as ductus arteriosus, was impervious. The aorta was given off from the common ventricle in median line.

The superior vena cava passed down the median line to left of aorta, instead of taking its usual course upon its right.

The valves of heart were two in number, the usual valves of aortic orifice and the tricuspid auriculo-ventricular.

Ductus arteriosus Botalli was pervious and equal in calibre to the innominate artery. It descended from beneath arch of aorta in a wavy, twisted course for half an inch, when it was joined by fibrous rudiment of pulmonary trunk, at this point giving off several branches to each lung. Below root of left lung was a large vessel, receiving blood from ductus arteriosus by a small straight trunk and from a large vessel coming from each lung. This vessel was without valves, one-third the size of the aorta, conducting arterial blood, and receiving most of its current from the pulmonary veins. It seemed to be physiologically the pulmonary veins, but, instead of emptying into an auricle, it continued downward in an anomalous course, and applied itself to the lesser curvature of the stomach, giving to that organ a rich supply of branches and continuing out to furnish a large trunk to the liver. It was then pulmonary vein and gastro-hepatic artery.

At the usual position of coeliac axis the aorta gave off a group of arteries as follows: two renal, superior mesenteric, and splenic. There were also anomalies among the veins. The left common iliac emptied into left renal vein. The right common iliac received the blood from the right renal and joined with the left renal at the border of the liver to form with the hepatic vein the inferior vena cava. The azygos veins, major and minor, were represented by an anomalous vessel of large size running along left side of aorta, which, having received the superior intercostal, curved forward over the arch of aorta and emptied into superior vena cava.

From likeness to the blood-course in lower forms of life, this heart is denominated "reptilian."

Grancher: *Convulsions in Children.* (*Gaz. Méd de Paris*, January 21, 1888.)

Convulsions of the first and second periods of childhood furnish an interesting but confusing chapter to infantile pathology. There is a great difference between the convulsions of these two periods. Grancher divides this variety



of disease into two great classes,—(1) essential convulsions of reflex origin; (2) symptomatic convulsions. Those which are of reflex origin always have the same physiognomy, and are subdivided as follows:

(1) They may be epileptiform, the child being attacked suddenly, uttering a cry, and falling, then passing through tonic and clonic spasms and coma, as in epilepsy.

(2) They may be tonic through the existence of this variety.

(3) They may be clonic, with incessant agitation, successive and alternate flexion and extension of the limbs.

(4) They may be partial, affecting a single limb,—the face, the commissures, the muscles of the eye. The muscles of the trunk and the diaphragm may also be involved, and such convulsions, especially when the diaphragm is involved, may terminate fatally.

(5) All the preceding varieties may be combined, each crisis being succeeded by another of different variety.

The so-called precursory phenomena of convulsions—insomnia, irritability, etc.—are not considered of much value. The results of these attacks are death, restoration to complete health, or the development of paresis, disorders of sensibility, etc.

Bouchut attributed the frequency of convulsions in children to the sensibility and irritability of the brain, but physiological investigations point in the opposite direction. The experiments of Simonoff and Fritsch and Hitzig show that in young children the excito-motor and moderative centres in the anterior lobes of the cerebrum which act through the cord and control motion are absent, and their absence is taken as the explanation of the frequency of convulsions.

In treating convulsions the author advises, first of all, the removal of all the child's clothing. The exciting cause may be a pin or a tight garment. The mouth should be explored to ascertain the condition of the teeth. The condition of the digestive apparatus must be ascertained, the ears and nose should be examined, and the child's disposition in regard to emotions and the imitative instinct be borne in mind. If the convulsions accompany high fever, one must remember the possibility of pneumonia, broncho-pneumonia, or the eruptive fevers. Convulsions may also occur simply as accompaniments of a bad state of health or abnormal dentition. The prognosis should always be a reserved one, especially if the convulsion is the first that has ever occurred to the child. For treatment a sedative draught should be administered, and the child should be placed in a warm bath. A laxative may

also be given. During the attack the child may be allowed to inhale a few drops of chloroform, and for a number of days afterwards he should be restricted to a milk diet. A. F. C.

**Sevestre: Papular Erythema of the Buttocks in Children.** (*Le Concours Méd.*, December 17, 1887.)

This condition is sometimes distinguished with difficulty from syphilis with papulo-erosive eruption. The eruption consists of rounded papules, four or five millimetres in diameter, of a red, brown, or violet color, flat and hard, and with glistening epithelium at the centre. The skin between the papules is healthy, excepting that by their side are erosions of the same form and size as the papules. At the projecting part of the buttocks the eruption tends to be confluent. The number of the papules is twenty to thirty, and they are not found in the natural folds of the skin. Parrot described this eruption as syphilitic, but the author thinks that is seldom the case. The eruption begins with a vesicle, is followed by an erosion, and after the succeeding papule has hardened for a few days it disappears, leaving only a brown or violet macula, which remains a long time. No syphilitic accident has been observed after this eruption, but it is admitted, of course, that syphilitic children may have a papular eruption upon the buttocks as the result of irritation from the discharges. The eruption which is under discussion occurs most frequently in children five or six months of age, and has no relation to athrepsia, being seen most often in vigorous children who are suffering from diarrhoea. The differential diagnosis from certain syphilides is very difficult. The appearance of the papules when fully developed is the same as that of syphilitic papules. There is no other manifestation, however, which is common to syphilis; the eruption is confined to the region of the buttocks, it co-exists with vesicles and erosions, and ends in recovery within a few days after the removal of the source of irritation. The author advises the local use of astringent antiseptic lotions, especially after each movement of the bowels. A. F. C.

**Hirschberg: Chronic Exudative Peritonitis in Children.** (*Arch. f. Kinderh.*, ix. 2.)

The chronic form of peritonitis in children does not differ as to its etiology from the same disease in adults, either assuming that form from the beginning or developing from an acute inflammation. It occurs not infrequently after the latter, and it is a matter of observation that this is a form of disease from which children seldom recover entirely. Until recently the teaching was that the chronic form of the disease

which did not result from the acute was either of tuberculous or cancerous origin. Galvagni, Quineke, and Vierordt, however, have described a chronic exudative peritonitis which is chronic from the beginning, and was recognized and described at length by Wolff as early as 1834. Seiler has also observed a primary chronic inflammation of the peritoneum, concerning which he concludes: (1) Simple ascites during childhood, tuberculosis being excluded, always depends upon a diffuse or circumscribed gummous syphilitic hepatitis, even in those cases in which the ordinary indications of syphilitic disease are absent.

(2) This condition is always amenable to treatment by means of mercury or iodine or the two combined. The differential diagnosis of this disease from tuberculous peritonitis is not always easy. A series of cases of both varieties is detailed in order to demonstrate the difference in the clinical symptoms. In the latter is to be observed a severe, characteristically malignant course, with rapidly increasing emaciation, which is speedily followed by a fatal issue, while in the former the course of the disease is less violent and alarming, persists for a long time, and shows some inclination to lead to a favorable termination.

Several different theories have been suggested as to the cause of chronic primary exudative peritonitis.

Galvagni and Rehn have attributed it to the influence of rheumatism, in connection with a sudden cooling of the body, especially after it has been overheated. Henoch considers that it depends upon trauma, whether the same is discoverable or not. Vierordt believes that it may be consequent upon trauma, measles, typhoid fever, ulcer of the stomach, or diarrhœa. Baginsky rejects the rheumatic theory, and accepts that of disturbance of the digestive organs as a satisfactory explanation of the cause of the disease.

Galvagni considers that the prognosis in this form of peritonitis is good, but the author is not so sanguine, as he has never been able to follow the history of a patient to complete recovery. He does not believe with Rehn, however, that a simple exudative peritonitis can terminate in the tubercular, but agrees with Vierordt that such a transformation is impossible. The existence of tubercle in other parts of the body of course strengthens the probability of its existence in the peritoneum. In the treatment of this disease large doses of iron, cod-liver oil, and extract of malt were found beneficial. Next to the improvement of nutrition, the production of resorption is to be aimed at, and an efficient agent was found to be the use of cold wrappings upon the body, either ordinary



water or Krenznach or other suitable mineral water being used. Simple rest in bed will also have a very useful effect, and to this may be added occasional inunctions of mercurial ointment. If the accumulation of ascitic fluid is large and persistent, paracentesis of the abdomen will probably prove efficient, and this measure is advocated by Fiedler, who believes that good results should be obtained, just as they are obtained by puncture of the thorax for serous accumulations following pleurisy.

A. F. C.

Arcelaschi: Contribution to the Study of Infantile Spastic Paralysis, from a Clinical Stand-point. (*Arch. di Patol. Inf.*, January, 1888.)

The author narrates at length a case of the before-mentioned disease which came under his observation, and reviews the literature of the subject, with the opinions and conclusions of the various classical authors. His views do not altogether coincide with those which are generally accepted, and he summarized them as follows:

(1) The different varieties of tetaniform neuroses in children, which are described by various authors under the names arthrogryphosis, chorea spastica, essential contractures, etc., do not show a series of phenomena which is sufficiently distinct and characteristic to constitute a separate morbid entity. In many cases they are to be classified with tetany, or else with true organic diseases representative of alterations in the central nervous system.

(2) Chronic encephalitis in children, which has been well-described in recent times, should receive from clinicians the same relative attention and study which are bestowed upon more common diseases. It is of more frequent occurrence than is commonly supposed, and may give rise to a series of morbid phenomena which will render differentiation from some other forms of disease difficult.

A. F. C.

Le Gendre: Infantile Diarrhœa. (*Le Concours Méd.*, December 17, 1887.)

The antiseptic treatment of diarrhœa in children is complex. It is not limited to the administration of antiseptic drugs; it includes many precautions, which must be taken in accordance with the septic theory of diarrhœa. Milk from the breast is already antiseptic, and when exposed to the air will resist fermentation, according to Baginsky, many hours longer than cow's milk. If milk is boiled fifteen or twenty minutes its bacteria and spores will be destroyed, and it will remain sterile and unchangeable until new germs have been introduced. To completely sterilize the milk which is given to an infant

is not necessary; it is only requisite that it should be brought to the boiling-point, and this may be done in the bottle from which it is to be fed. If the diarrhœa is cholëricform in character, the indications are to evacuate the intestine as long as it contains any undigested matter in which microbes can flourish, also to oppose fermentation by the introduction of non-fermentescible aliments, and to combat the symptoms produced by the poisons which have been secreted by the microbes. Calomel is to be approved of for diarrhœa, both on account of its evacuant and its antiseptic properties. It may be given in doses of five to thirty centigrammes. Resorcin may be given in doses of twenty to fifty centigrammes in a suitable medium. Other substances which are recommended by well-known pediatricists are salicylate of soda, benzoate of soda, hydrochloric acid, naphthaline, carbolic acid, nitrate of silver, thymol, and beta-naphthol. Antisepsis may be accomplished by the use of rectal enemata, consisting of large quantities of hot water mixed with a sufficient quantity of alcohol or salicylic acid. The disorders of the nervous system resulting from sepsis and manifested by collapse, with or without convulsions, may be treated with brandy in sufficient quantities; musk in doses of five to ten centigrammes every fifteen to thirty minutes; camphor in one-centigramme doses combined with a small quantity of sugar, Dover's powder, or bismuth, according to Jacobi's formulæ; or hypodermic injections of ether or caffeine, as recommended by Caillé. The results which have been obtained by Hayem and Lesage in the treatment of diarrhœa with green stools by means of lactic acid show the resources of the antiseptic theory, the principle in this case being that the microbes which cause the disease would not develop in an acid medium. He used a two-per-cent. solution of lactic acid in water and sugar, and administered it in teaspoonful doses after each nursing, with the result of rapidly checking both diarrhœa and vomiting. The treatment included also complete disinfection in sublimate solution all the soiled clothing.

A. F. C.

**Kraus:** Statistical Contribution to the Pathology of Congenital Syphilis. (*Arch. f. Kinderh.*, ix. 2.)

The author's investigations included an analysis of the histories of forty-nine thousand seven hundred and seventy-five cases of disease in children which were seen during fifteen years at Monti's polyclinic at Vienna. Among these cases were found three hundred and sixteen in which congenital syphilis was present. The results of the investigations are to be found in the answers to the following series of questions:

- (1) What is the frequency of congenital syphilis?
- (2) Does sex have any bearing upon the frequency of this form of disease?
- (3) At what age is the greater number of cases of congenital syphilis seen?
- (4) What is the relation of recurrence in this disease to age?
- (5) In what numerical relation are the different varieties of this disease observed?
- (6) In what relation does the occurrence of definite varieties of this disease stand to the age of the children?
- (7) What is the frequency of tumors of the spleen, liver affections, and syphilis of the bones?
- (8) What is the rate of mortality, and what diseases appear to be the principal causes of death?
- (9) What is the relation of hydrocephalus and rachitis, as *sequelæ*, to congenital syphilis?

To the first question the answer must be given that in the records which were searched the diseases did not seem to increase in frequency from year to year.

The answer to the second question is that sex had no bearing upon the number of cases. In the author's table the number of boys and of girls was the same.

As to age, there were fifty cases in the first month of life, fifty-one in the second, forty-three in the third, twenty-four in the fourth, seventy-two in the remaining months of the first year, thirty-three in the second year, and forty-three in the subsequent periods.

With reference to recurrence (question 4) there were one hundred and twenty-one cases, of which forty-five occurred between the third and twelfth months, thirty-three between the first and second years, and forty-three after that period.

Of the different varieties of the disease (question 5), in seventy-one there were condylomata, in forty-eight the eruption was macular, in twenty-four papular, in eleven a mixture of the papular and macular, in seven there was psoriasis, in ten the eruption was pustular, in nineteen there was laryngitis, in one iritis, in three gummata, in sixteen the bones were involved, in two there was sclerema, in nine there was inflammation of the cellular tissue; the remaining ninety-five cases were unclassified.

In the table showing the different varieties with reference to age (question 6), of the forty-eight cases in which the syphilide was macular, forty occurred in the first three months of life, six in the second, and two in the third. Of the twenty-four papular syphilides, twelve were in the first quarter, four in the second, six in the third, and two in the fourth of the first year.



Of the eleven cases of mixed papular and macular, five were in the first quarter, three in the second, and three in the third. Of the ten pustular cases, eight were in the first quarter, one in the second, and one in the third.

In answer to the seventh question, forty-five cases of enlargement of the spleen were found, four of enlargement and inflammation of the liver, and sixteen of affections of the bones and paralysis.

As to mortality (question 8), there were forty-three deaths: twelve from pneumonia and bronchitis, ten from entero-catarrh and enteritis, four from meningitis, four from atrepsia, two from peritonitis, and in the others the cause was not known.

In answer to the ninth question, twenty-four were affected with hydrocephalus, sixteen with rachitis, and seven had a combination of the two diseases.

A. F. C.

Affanassieff: *Etiology and Clinical Bacteriology of Whooping-Cough.* (*Centr. f. Kinderh.*, October 29, 1887.)

The experiments of the author were made with all the necessary care, and are detailed with great minuteness. A small portion of sputum from a patient with whooping-cough, examined under a power of seven hundred to one thousand diameters, showed a great number of short rod-bacteria, some of which were solitary, and others in chains of two or more. On account of their difference from all previously observed bacteria the author made cultures of them, a small portion being placed upon two dishes of meat-peptone-jelly, and another portion upon two of meat-peptone-agar-agar. After two or three days numerous colonies of bacteria appeared upon all the preparations. These colonies were round or oval, clear brown in color, and not diffusing through the gelatin. Others were round, black, and serrated at the border. Others were large, not readily stained, and thick rods; and others were round, with serrated borders and a brown interior, composed of round, large cocci. In the colonies of the first-mentioned variety pure cultures were seen with the microscope, which, after careful comparison with all other known bacteria, were believed to be *sui generis*. Similar results were obtained with sputum from other whooping-cough patients, after which these pure cultures of rod-bacteria were used to inoculate different culture media. This variety of bacterium grows rapidly at a temperature of 37° to 38° C. It does not diffuse through the culture medium, and develops most favorably on potatoes and on meat-peptone-agar-agar. In these media a decided deposit was visible as early as the second day, the deposit being first of a translucent gray color, and subsequently entirely white.

A similar deposit was obtained upon sterilized blood-serum, excepting that the growth was not very extensive. On potato the deposit was bright and yellow, and subsequently brown and thick. On gelatin the microbe grew slowly, the deposit being thin and gray, with a rough surface and irregular borders, which became decidedly serrated by the eighth or ninth day. The author made eighteen inoculation experiments upon animals with these pure cultures. A solution was made from an agar-agar culture, at least eight days old, and one or two cubic centimetres of chloride of sodium, and this was injected into the air-passages or lung-tissue of puppies and dogs, under antiseptic precautions. All the animals sickened with a disease which resembled whooping-cough, and was often complicated with broncho-pneumonia. Some of them died, and post-mortem examination showed that the chief locations of the bacteria were the mucous membranes of the bronchi, the air-passages, and the nose. Similar bacteria were found upon the bodies of children who had died from whooping-cough, and the conclusion is therefore warranted that the true cause of whooping-cough is this bacillus, which has been called *bacillus tussis convulsivæ*. Nothing new is offered in the way of treatment.

A. F. C.

Le Gendre: Sclerosis of the Brain in Children. (*Le Concours Méd.*, December 3, 1887.)

This disease is comparatively little known, notwithstanding the writings of Jules Simon, who has described the principal clinical forms, and has insisted upon the necessity of making an early diagnosis of this interstitial inflammation of the brain when the process is still one of irritation and the prospects of giving relief still exist. The causes of this disease vary according as it occurs before the end of the second year of life on the one hand, or between the second and fifth on the other. Possible causes are pressure upon the head at birth, either by the forceps or in the natural course of a prolonged labor, semi-asphyxia from winding of the cord about the neck, or violent moral emotions on the part of the mother during gestation. Two important causes are mentioned by Le Grand du Saullé,—heredity of troubles of the nervous system on the maternal side, and alcoholism on the paternal side. Syphilis is also one of the possible causes. In children five or six years of age the various infectious diseases are regarded by West as primary causes of irritation of the connective tissue of the brain or spinal cord. Traumatism of the skull are also causative in some cases. As to the distribution of the lesions of this disease three forms may be considered, as follows:

(1) Sclerosis may affect the connective tissue of an entire lobe, leading to atrophy and retraction. It may involve the temporal or frontal lobe, or even an entire hemisphere, in lobar atrophic sclerosis.

(2) Hypertrophic sclerosis of the brain of Bourneville and Brissaud consists of projecting foci of connective tissue irregularly distributed upon the surface of the convolutions.

(3) Plaques of disseminated sclerosis in the brain are usually associated with similar developments in the cord.

As to the symptoms, the disease is initiated by convulsions involving all the limbs, and attended by loss of consciousness. They recur frequently, and resemble attacks of epilepsy. Paralysis and contractures soon result, the child's intellect remains undeveloped, the paralyzed limbs become atrophied, the tendon reflexes are exaggerated, and athetosis not infrequently occurs. Three facts are particularly noticeable:

(1) The initial convulsions, which are repeated during the entire life of the child, under the form of partial epilepsy.

(2) Paralyzes in various situations, usually hemiplegic, and contractures of the paralyzed parts.

(3) Disturbances of the intellect, which may terminate in idiocy and confirmed dementia.

Before the convulsions occur there is a premonitory period, which Simon has described as the period of *cerebral irritation*. During this period, when the patients are not asleep, they are constantly agitated and restless; they cry without any apparent motive, and never seem at ease. This is the time for successful intervention by means of calmatives and antispasmodics, especially the bromides. In cases in which the disease is not begun by convulsions there may be paralyzes or contractures instead, with convulsions subsequently. The troubles in the intellect vary with the stage of development which was reached before the disease began. Idiocy occurs in one-third of the cases, but it is a noteworthy fact that in cases in which the process of sclerosis is circumscribed there seems to be sometimes a compensatory action in the sound hemisphere for the loss or atrophy in the diseased one.

The convulsive phenomena are of two varieties:

(1) Attacks of epilepsy, simulating ordinary epilepsy in all respects.

(2) Epileptiform attacks affecting the four limbs and the face, or convulsive attacks in the form of partial epilepsy. Jacksonian epilepsy, limited to the paralyzed member, also occurs. Motor paralysis may be general, but more frequently there is monoplegia, hemiplegia, or paraplegia. Contractures may affect the paralyzed limbs, or they may be present with-



out paralysis. Bilateral equinus is not infrequently seen. Trophic troubles exist in the form of atrophy of the paralyzed muscles, thickening of the skin, chilliness, livid color of the limbs, and perspiration. The electrical contractility is always normal, and the general sensibility remains intact. There may be sensorial troubles arising from a concurrent strabismus. Deformities of the cranium may follow the rapid retraction of the cerebral mass at the areas of sclerosis. The evolution of the disease may be divided into two periods:

(1) The initial period, with its convulsions, coma, and contractures.

(2) The advanced or established period, with its intellectual troubles, paralysis, contractures, and epileptiform attacks.

The duration of the disease is indeterminate; it may last many years.

The hypertrophic or tuberous form of the disease has a more rapid course; patients seldom live beyond the tenth year. Its symptoms do not differ materially from those of the atrophic form, but the intellect is usually affected more profoundly, the patients being usually idiotic and subject to frequent and intense epileptiform convulsions. The differential diagnosis is often impossible at the beginning of the disease, but subsequently it is not difficult. The diseases which are to be excluded are atrophic infantile paralysis, disseminated cerebro-spinal sclerosis, hereditary ataxia of Friedreich, cerebral tumors or tubercles, cerebral and meningeal hemorrhages, foci of softening, tubercular meningitis, and true epilepsy. The treatment can be efficient only during the premonitory stage, and may consist of small daily doses of the bromides and baths with sedative thermal waters. In some cases there seems to be arrest of the disease, followed by retrocession. The intellect is also susceptible of development to a certain degree, and the results which have been obtained by Mme. Nicolle at the Salpêtrière in this respect are as remarkable as they are gratifying.

A. F. C.

Grancher: Diagnosis of Ascites in Children. (*Arch. di Patol. Inf.* [abstracted], November, 1887.)

Excluding ascites of cardiac or albuminuric origin, this condition may be caused by tubercular peritonitis, or atrophic or hypertrophic cirrhosis. The existence of this condition in children is usually considered as indicative of tubercular peritonitis. There are cases, however, in which it is necessary to make a differential diagnosis from that condition which arises from hepatic cirrhosis. A case is cited by the author of a child five and a half years of age, who at the age of two years

showed excessive protuberance of the abdomen. His appearance was cachectic, the complementary circulation exaggerated, and on three different occasions aspiration was practised, six litres of liquid being withdrawn on each occasion. Death occurred when he reached the age before mentioned, and at the autopsy the liver was found in a condition of atrophic cirrhosis. While it is admitted that this condition may coexist with tuberculosis, there is no evidence that it did in this case.

In general, cirrhosis of the liver means atrophy of the organ, and the presence of tumors disseminated through the abdominal cavity constitutes the salient symptom of tubercular peritonitis. If these conditions cannot be clearly made out, then it will be necessary to investigate carefully the form of the ascites. If the liquid is localized and immovable in one portion of the abdomen and is not excessive in quantity, the probabilities are that tubercular peritonitis is present, especially if morbid changes in the lungs exist at the same time. On the other hand, if the liquid is movable and is in great quantity, hepatic cirrhosis probably exists. This differential diagnosis is most important, especially since tubercular peritonitis is much more susceptible of cure in children than in adults, and this will have a decided bearing upon prognosis and treatment. The existence of hypertrophic cirrhosis of syphilitic origin must also be considered in reference to prognosis and treatment, and as this is an affection which may occur in new-born infants, the point should not be forgotten by obstetricians. A. F. C.

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### III.—SURGERY.

Lepage: Tracheotomy in Children. (*Le Concours Méd.*, November 5, 1887.)

This operation is indicated in all cases in which there is an obstacle in the larynx to the passage of air, which is liable to cause death from asphyxia. This is indicated by urgent dyspnoea, supra-sternal and diaphragmatic obstruction, paroxysms of suffocation, pallor of the face, etc., and usually shows that the difficulty is not in the lungs nor of toxic origin. If the patient is suffering from croup the operation should usually be deferred as long as possible, the fact that many children recover from this disease without surgical intervention being borne in mind. Should the obstruction to breathing continue twelve to twenty-four hours and asphyxia be imminent, the operation is indicated; if the symptoms do not increase in urgency it should not be done. The operation can usually be deferred longer in hospital than in private

practice. In cases of severe diphtheria early operations are apt to be more successful than late ones. The swelling of the neck in the advanced stage of the disease increases the difficulty of the operation, and there is then, also, more danger from syncope and hemorrhage. It is never too late to operate; at all times the operation *in extremis* is a matter of necessity and not of choice. There are no formal contraindications to the operation; it is always excusable, if it is not peremptorily demanded. Renault, whose posthumous work on this subject is here reviewed, after analyzing the three methods of tracheotomy which are best known,—namely, those of Trousseau, Bourdillat, and Saint Germain,—gives the following principal rules for the performance of the operation:

1. One should stand upon the right side of the patient.
2. All the necessary instruments should be within reach of the operator, including a straight- and a blunt-pointed bistoury, a dilator, two canulæ of proper size, and some goose-feathers.

3. The patient should be laid horizontally upon the table, with the neck somewhat extended.

4. The larynx should be grasped by its sides at the level of the thyroid cartilage, as if for enucleation, between the thumb and middle fingers, while the index finger of the same (left) hand should find the cricoid cartilage, the finger-nail being placed upon its lower border. The left hand should not move until the canula is fixed in the trachea.

5. The operation should then be rapidly performed, and should not last longer than half a minute or a minute. The first incision should be two and a half or three centimetres long in the median line, and should extend through the skin. One or two additional incisions of the same length will bring one upon the trachea. The incisions should begin at the point which is fixed by the nail of the index finger. The bleeding is not apt to be of any importance in this situation. The trachea being felt by the index finger, it should be divided, the incision being as long as the external ones. Should it be necessary to extend the incision, the blunt-pointed bistoury should be used, the cut being extended downward.

6. The canula should be grasped with the right hand, and slipped along the left index finger, which remains in the wound as a guide. The introduction of the canula is announced by the so-called *canular bruit*. If after one or two attempts the canula cannot be adjusted, and the child seems to be on the point of suffocation, the wound should be dilated and another attempt made at introduction. If after the



canula has been introduced the *bruit* is not heard, one of the feathers should be introduced to excite coughing or to assist in removing the false membrane which is obstructing the trachea.

7. Not until the canula is introduced should the left hand relax its grasp upon the larynx. Then the canula should be steadied with the right hand until the tapes are fastened about the neck.

The incisions may be too long, including the thyroid cartilage, the crico-thyroid membrane, and the cricoid cartilage. The result will be an abundant hemorrhage, and the canula will not be well retained. If the incisions are too short, valuable time will be lost. If they are too high, they must be prolonged downward until the incision will admit a canula. If they are too low, they increase the difficulty of the operation and may give rise to severe hemorrhage. If they deviate from the straight line to either side, they will make the introduction of the canula very painful. Incisions that are too deep or not deep enough are liable to be made when the operation is performed at a single stroke. Incisions may be ineffective when the trachea is not firmly fixed and deviates under the knife; this is especially apt to be the case if the incision is not made exactly in the median line. If an improper incision has been made, it will often be better to make a new one than to prolong the operation unduly by trying to rectify it. If the canula is not adjusted into the wound with sufficient care there is danger of penetrating the cellular tissue surrounding the trachea. The operator should give his entire attention to the operation, the only excuse for interruption being the imminent death of the patient.

Renault's work also treats of the immediate accidents of tracheotomy, the care which the child should receive after the operation, the early or late complications, and many important clinical details.

A. F. C.

Eve: Tuberculosis communicated by Circumcision. (*Lancet*, January 28, 1888.)

A Hebrew child, five months old, presented a globular swelling in each groin, and a superficial sore on the frænum. The swellings suppurred, were opened, and some pus and caseous material evacuated.

A guinea-pig was inoculated with some of this material, and in ten weeks died, the autopsy showing intense general tuberculosis.

The history was that the circumcision wound seemed to heal properly, but that six weeks later lumps in each groin were

observed, and the wound was thought to have "broken out again," or else it had not been perfectly healed.

The person who performed the rite died of tuberculosis in about eight months after the operation. He had not applied his lips to the wound, but after removing the prepuce he had ejected from his mouth some wine over it. When last seen the child appeared to be well.

Other similar cases are referred to.

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## Bibliography.

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DISEASES OF THE HEART AND CIRCULATION IN INFANCY AND ADOLESCENCE. By JOHN M. KEATING, M.D., Obstetrician to the Philadelphia Hospital and Lecturer on Diseases of Women and Children; Surgeon to the Maternity Hospital; Physician to St. Joseph's Hospital; Fellow of the College of Physicians of Philadelphia, etc.; and WILLIAM A. EDWARDS, M.D., Instructor in Clinical Medicine and Physician to the Medical Dispensary in the University of Pennsylvania; Physician to St. Joseph's Hospital; Fellow of the College of Physicians; formerly Assistant Pathologist to the Philadelphia Hospital, etc. Illustrated with Photographs and Wood Engravings. Philadelphia: P. Blakiston, Son & Co., 1012 Walnut St. 1888.

A very attractive and valuable work has been given to the medical profession by Drs. Keating and Edwards, in their treatise on the diseases of the heart and circulation in infancy and adolescence, and they deserve the greatest credit for the admirable manner in which they have collected, reviewed, and made use of the immense amount of material on this important subject, which for years has appeared in its literature in such a disconnected form as to render the proper use of the information with which this literature abounds a most difficult task previously, where now, as systematically arranged by the authors, it becomes a combination of pleasure and profit.

We do not wish to give the impression by the above remarks that the book is a mere compilation, for its pages are everywhere stamped with the evidence of original thought and careful clinical and pathological investigation, made all the more valuable by the fair and broad way in which the

opinions of other writers are referred to, and the judgment and discretion exhibited in the choice of the articles made use of in the preparation of the book.

The work has already in a measure been published in monthly instalments in the *ARCHIVES OF PEDIATRICS* during the year 1887, but now in its book form, with many changes from and additions to its journal pages, which were read with much interest by subscribers to the *ARCHIVES*, it appears in a neatly-printed and bound volume, which will be an important addition to the library of all who are interested in the study of pediatrics, as well for general information as for purposes of especial investigation.

An excellent bibliography of the more important and illustrative cases of congenital heart-disease accompanies the chapter on that difficult subject, which is dealt with clearly and succinctly, avoiding the error of recording too much, and thus obscuring still further the rather dim light with which we are forced to work in making a diagnosis in this class of cases.

The book contains about two hundred pages, which are divided into ten chapters, illustrated by wood-cuts, some valuable tables, and, in the chapter on valvular disease, by excellent photographs of mitral stenosis and mitral regurgitation. One of the tables, which illustrates the dimensions of the circumference of the aorta at its origin according to age and sex, and the relations of this quantity to the length of the heart, is especially interesting, for it enumerates the favorable prognosis of cardiac disease in the young in comparison with the adult heart, and explains anatomically the inherent power to overcome morbid changes which we so often meet with clinically in early life.

The latter part of the work is devoted to cardiac neuroses and diseases of the blood, and contains much that is of practical interest and value to the general practitioner, who will find many of the more difficult problems which arise in diseases of this class clearly and carefully explained and the appropriate treatment distinctly stated.

In conclusion, we would again refer to what appears to us to be the strong point of the whole work, which ought to make it a success,—namely, the rare judgment shown in the condensation of a large amount of material into a form which, while its reading matter is within the limits of the time which can be bestowed upon it by the average busy practitioner, yet continually gives the impression of honest, intelligent, original work, and leaves us, as we lay down the book, with a feeling of satisfaction, and that we can say for it “well done.”

T. M. R.



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## Original Communications.

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### THERAPEUTICS OF INFANCY AND CHILDHOOD.

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(Continued from May Number.)

#### III.—GENERAL THERAPEUTICS.

*Subcutaneous injections* of remedial agents ought to be made more frequently than appears to be customary. The extremities ought to be avoided, for their constant motion and the relative absence of fat in their subcutaneous tissue are liable to give rise to local irritation, swelling, or suppuration. The abdominal wall is preferable. A sharp and aseptic needle and gentle friction of the injected part are all that is required. The solutions used must be clear and without any solid ingredients. When they have been preserved for some time they ought to be filtered before being used, particularly when fungous growths have begun to make their appearance in the liquid. The latter may be preserved best by adding a small quantity of alcohol, salicylic acid, or hydrocyanic acid. The doses must be small, and the medicine diluted more than in the case of adults. This is mainly required where a caustic effect is to be feared. While, for instance, Lewin advised for adults a solution of four grains of bichloride of hydrargyrum

in an ounce of water, one or one and a half grains give a more appropriate solution for infants. One or two daily doses of eight or ten drops continued for weeks will prove very useful in those urgent cases of hereditary syphilis which are characterized by pemphigus on the soles of the feet and the palms of the hands in the first days after birth. Brandy and ether may be used undiluted as in adults, but the greatest care must be taken as to the locality injected. The subcutaneous tissue must be reached and the cutis penetrated. Chloral hydrate dissolves readily in two parts of water, but a solution of one in four or six is better tolerated. For the ready symptomatic treatment of convulsions it renders good service. Antipyrin is well borne in solutions of one in six or eight parts of water, camphor in from four to six parts of almond oil. Digitalin, in solution, and the fluid extracts of digitalis and ergot, are very apt to give rise to indurations and abscesses. As a rule, the most convenient medicaments for hypodermic administration are the very soluble alkaloids. One or three drops of Magendie's solution of morphia or the corresponding solution of muriate of morphia are vastly preferable to the internal use of narcotics for bad pain in pleuritis or pleuropneumonia, or in peritonitis. It may be mixed with atropiæ sulphas for the reasons regulating its use in the adult. The latter by itself has been found quite effective in the case of an epileptic boy, who had taken the same drug internally without any success. If possible, it ought to be injected during the aura; if not, twice a day. Apomorphiæ murias is a ready emetic in doses of a thirtieth or a fifteenth of a grain. Pilocarpîæ murias can be injected in doses of one-twentieth to one-eighth of a grain. Its reckless use, both hypodermically and internally, has led to occasional mishaps, but the drug is a powerful agent for good when carefully applied, and has saved for me several cases of meningeal hyperæmia and cerebral œdema, mostly of nephritic origin. Sulphate of strychnia, while in the same affections it has mostly proved inefficient when taken internally, has rendered efficient services in enuresis depending on paralysis or weakness of the sphincter of the bladder, and in prolapsus of the rectum, and fæcal incontinence resulting from paralysis of the

anus, which depended either on disease or congenital incompetency. In these cases a daily dose of a fortieth or a twenty-fifth of a grain—according to the age of the patient or the severity of the case—is sufficient. More frequent doses, however, are required in the diphtheritic paralysis of the respiratory muscles, which is dangerous and apt to become fatal unless speedily relieved. A daily dose will also yield fair results, when long continued, in spinal or cerebral paralysis. Quinia salts must be neutral when injected; I prefer the bromide, the muriate, or the carbamide. They, particularly the last, are among the most soluble. The carbamide dissolves readily in from four to six parts of warm water; the latter temperature ought to be preferred in every case of subcutaneous injections. Quite saturated solutions ought to be avoided, because it has happened to me that the water of the solution was speedily absorbed, and the quinia remained as a foreign body in the subcutaneous tissue. Caffeine, in its combination with sodium and salicylic or benzoic acid, is an excellent heart stimulant, and has rendered splendid service in urgent cases of heart-failure or pulmonary œdema depending on cardiac disease. Both the salicylate and the benzoate of sodium and caffeine are soluble in two parts of water, and are readily absorbed. Neither has, as yet, been prepared in the convenient tablet form which has proved so acceptable in the cases of other alkaloids. Both must be avoided in those cases which are complicated with cerebral irritation. Fowler's solution, carefully filtered, may be injected into healthy or morbid tissues without often risking irritation and abscess. Still, I have seen a splenic abscess after such an injection in a case of sarcoma of the spleen. Undoubtedly, the continued use of arsenic renders very efficient services in sarcoma; but as it has to be used a very long time, it is almost useless, except in hospital practice, to rely on hypodermic medication. There is no harm in this, however; for a very gradual increase of the drug is tolerated to such an extent that, after awhile, very large doses (amounting to half a drachm or a drachm daily) of Fowler's solution may finally be administered.

*Inhalation* is resorted to in two different ways. Either the air of the room or a tent is impregnated with the substances



to be introduced into the air-passages, or these substances are introduced through sprays or atomizers of different shapes and patterns. Some of the latter have always appeared to me very faulty, and not to the purpose at all. Tubes introduced into the mouth, through which substances are to be carried down, will land them in the mouth; it takes all the self-control and intelligence of an adult patient to allow the object in view to be accomplished. The oral cavity is small, the tongue gets coiled up, and the faucial muscles will not relax. Nose and mouth must co-operate to allow inhalations to enter the larynx, or the former alone must be relied on. A spray calculated to reach the larynx is always best introduced into and through the nose. In this way, at all events, the posterior part of the pharynx and the respiratory tract are reached to best advantage.

Real inhalation, however, means filling the lungs with a gas or vapor. Warm steam will do good service in bronchitis and pneumonia, when the bronchial secretion is viscid and expectoration difficult, and in diphtheria, for the purpose of softening membranes and increasing the secretion of a thin and normal mucus. Cases of fibrinous bronchitis I have seen getting well in bath-rooms, the hot water being turned on for days in succession and the air thick with steam. An excellent inhalation in the inflammatory conditions of the respiratory organs is that of muriate of ammonium. Every hour, or in longer intervals, a scruple or more of the salt—the quantity depending in part on the size of the room—is burned on the stove, or over a live coal or an alcohol lamp. The heavy white cloud fills the room, is easily borne by both sick and well, and improves expectoration. Oil of turpentine can be utilized in a similar way. Its action is both expectorant and disinfectant. In the latter stages of pneumonia, when the bronchial secretion is thick, viscid, or deficient, and expectoration and cough are wanting, the room may be filled with turpentine vapor. This can be accomplished in different ways. A large soft sponge may be soaked with turpentine, with or without the addition of some oil of sassafras, and suspended at the bedside. Or a kettle may be kept boiling day and night with water, on the fireplace or over an

alcohol lamp (which is preferable to a gas-stove, which consumes too much oxygen), and a tablespoonful of turpentine, more or less, poured on the boiling water every hour or two hours. The same may be done to advantage in diphtheria, with or without a teaspoonful of carbolic acid in addition to the turpentine, and in gangrene of the lungs. The inhalation of benzin, cresolin, and similar substances, and the coal-gas of the gas-factories, have been amply recommended in whooping-cough. In its worst forms, particularly when it is complicated with convulsions, the frequent inhalation of chloroform is sometimes life-saving. A baby of six months, with hourly attacks of convulsions, I kept alive by putting him under the influence of chloroform at the beginning of every attack, and continuing that treatment for fully four days. Asthmatic attacks will do well sometimes with inhalations of chloroform, ether, and spirits of turpentine in different proportions. Nitrite of amyl also will influence them favorably; as a preventive of epileptic attacks I have experienced but little success with its administration. But in collapse, with paralysis of peripheral blood-vessels, it certainly renders good service. With the inhalation of oxygen for the purpose of bridging over the most dangerous period of a suffocating pneumonia, and of improving tissue-change in general anæmia and ill-nutrition, the profession is well acquainted. With the inhalation of ether as an antidote to poisoning with santonine I have no personal experience.

In pulmonary tuberculosis the inhalation of disinfectant vapors is employed less than the necessity of the cases appears to indicate. Carbolic acid, turpentine, eucalyptol, may be utilized for that purpose. The object is to supply the lungs with those substances in thin dilutions, but constantly. Prudden has proved that carbolic acid in twelve hundred parts of water stops the emigration of leucocytes in inflammatory disorders. Thus high dilutions, though they be hardly perceptible to the senses, and certainly not to a disagreeable extent, are amply sufficient. It is for this reason that Feldbausch invented small apparatuses filled with a disinfectant substance to be worn in a nostril, constantly.

The inhalation of chloroform, which is preferable to ether

for the purpose of producing anæsthesia in the cases of infants and children, is rather unsatisfactory at the earliest age because of the superficial character of respiration. Its effect is very temporary, and the administration must be repeated during a convulsion or an operation. The difficulty in obtaining a complete narcosis is particularly great in the newly-born. The stage of excitement is but brief, the pulse becomes frequent, and the pupils contract. After a short time the pulse, however, becomes slow, and the pupils dilate. The after-effects are not so inconvenient as they often prove in the adult; children vomit less frequently and less profusely, and certainly with greater facility and ease, than adults. They are liable to remain under the influence of the anæsthetic a long time after an operation has been completed. After tracheotomies, which I never performed without chloroform unless the children were asphyxiated by carbonic acid poisoning, the patients are apt to sleep long and undisturbed. Thus they require a ceaseless watching until the effect has surely passed away. Through the opened trachea the children will get under the influence of chloroform very easily. Five or six drops on a sponge or some absorbent cotton, held in the mouth of the tube by means of a pair of pincers, have an almost instantaneous effect, and came near destroying a successful case of mine nearly thirty years ago, before I had the experience detailed in the previous remark, when I undertook to change the tracheal tube on the third day. Further care is also required in regard to patients in ill health. Chronic pulmonary and heart diseases do not tolerate chloroform very well, but the diagnosis of these conditions is more readily and quickly made in children than in the adult. Adipose children are liable to faint. Operations in the mouth it is best to perform without an anæsthetic, for the amount required to overcome the resistance of the masseter and buccinator is so large, generally, as to possibly endanger the life of the patients, beside the impossibility of obviating successfully the entrance of blood into the digestive organs, where it is inconvenient, or the respiratory organs, where it is a positive danger.

*Gargles* of any description require a certain degree of training and self-control, and are therefore not available for children



of less than seven or eight years. The liquids thus employed do not reach any farther than to the uvula, the pillars of the soft palate, and the anterior part of the tonsils. Whatever succeeds in passing them is swallowed. Thus the alleged efficacy of gargles is greatly overestimated. Astringents only have a certain influence reaching beyond the area of contact through their secondary effect on contiguous tissue. When a thorough effect is aimed at, it is better to rely on sprays, which may affect the whole pharyngeal cavity, or on insufflations of powders. As, however, in most cases where a local effect on the pharynx is desirable, the local affection spreads over the posterior nares as well, spraying, or injecting, or irrigating the nose is preferable. The liquids thus employed reach the pharynx, and are either swallowed—which is often an indifferent matter—or expelled through the mouth. When these methods are undesirable, for instance, when the liquids injected enter the Eustachian tube, they may be poured into the nasal cavities from a teaspoon or a pipette. A common medicine-dropper will often suffice. There is many a case of diphtheria in which the very gentlest method of cleansing and disinfecting the surface of the naso-pharyngeal cavity ought to be selected.

When no liquids are tolerated, fluid ointments may be introduced into the nostrils by means of a camel-hair brush, or poured in. Ointments prepared with vaseline, glycerin, or cold cream are good vehicles for that purpose. Sponges and brushes ought to be avoided whenever the young patient objects to these strenuously. No violence must be used, for several reasons. The child's strength must not be exhausted by his attempts at self-defence, and most local affections of the throat get worse by any injury done to the epithelia. Even galvano-cauterization can and must be applied without much violence. Persuasion, patience, and cocaine will render it possible.

The *skin* in infancy and childhood participates in the anatomical structure of all the tissues at that early period, inasmuch as it contains more water than in advanced age. Besides, it is thinner. This explains many peculiarities in regard to the effects of many medicaments. Electricity in all

its forms is more efficient, and a relatively mild current suffices. This fact is of particular importance, as, moreover, the bones also are thinner and more succulent. To act upon the brain, very mild currents only must be used. The spinal cord is less accessible, and appears to require rather large doses. The galvano-caustic effect resembles very much that obtained in the adult. In most cases it can be watched while being employed; thus, for instance, in the operation on angiomas, or diseases of the tonsils or nose.

*Sinapisms*, when not mixed with flour, must not be permitted to remain more than a few minutes. As soon as the skin begins to be discolored they must be removed. When that is done, they may be repeated every few hours, and they are active derivants in many cases of deep-seated congestive processes. The same remark is due in reference to the use of mustard-baths. A hot mustard-bath renders good services in suppressed or insufficient cutaneous eruptions of an acute character, internal hemorrhages, meningitis, and pneumonia. But it must not be continued beyond reddening the skin.

*Vesicatories* have lost much of the esteem in which they were held in former times. I remember the time when many a case of pleurisy, articular inflammation, herpes zoster, was not permitted to get well without a Spanish-fly blister. Nor am I of the opinion to-day that it will do no good in some such cases, provided it be not used during the feverish stages. But their drawbacks are many. A plaster will not stick to an emaciated and uneven surface, and is even apt to give rise to gangrene when the surface circulation is very defective. In these cases the wound will heal badly. The skin of the infant being very vulnerable, eczema and impetigo will easily arise on even slight provocation. The local pain of the application produces irritation, nervousness, and sleeplessness. This is particularly so if the application be made on the extremities or the posterior surface of the body. The kidneys are frequently affected by cantharides, dysuria being the result in many cases, which then require energetic camphor treatment for the relief of the torturing symptoms.

There are some absolute contraindications to the external use of cantharides: the presence of diphtheria in any shape

or manner, and such diseases as are liable, during the prevalence of an epidemic, to become complicated with diphtheria. Therefore no vesicatory must be used during nasal, pharyngeal, or laryngeal diphtheria (croup), or in the different forms of pharyngitis, or in laryngeal catarrh.

When a plaster cannot be expected to remain on the surface and to have its full effect, cantharidal collodion may take its place. The application will prove more effective when the surface is first washed with vinegar, or irritated by a sinapism, which, however, is allowed to remain a few minutes only. Then a flaxseed-poultice or warm-water applications may be applied over the vesicatory to diminish the pain and increase the effect. Very young infants ought not to carry a vesicatory more than an hour, at least not on the same spot. It is for this reason that to them the cantharidal collodion is less adapted. The plaster may be shifted from place to place.

After the epidermis has been raised, the serum must be allowed to escape through small punctures, but not so as to moisten the adjoining parts, for the cantharidin contained in the serum may exert a disagreeable local effect. The epidermis ought not to be removed, and no irritating ointment used to keep up a secretion. To cover the sore surface, vaseline or cold cream are preferable to animal fats, which may be, or become, rancid. The best final dressing is borated cotton and a bandage. Vaseline ointments with opium, lead, or zinc, and powders of zinc, subnitrate of bismuth, iodoform and amylum, in equal parts, or salicylic acid one part, with five or ten of starch, will find their occasional indications.

In many affections of the skin powders, solutions, liniments, ointments, and baths are employed. The skin is thin and irritable. Erythema will follow the contact with water quite often; thus many forms of dermatitis contraindicate its frequent use. Acute and chronic eczema get on better without than with it. Therefore astringent solutions are less advisable than astringent ointments. For superficial effect these must be prepared with vaseline or cold cream, either of which may be readily combined with lead, tannin, zinc, bismuth, salicylic acid, or iodoform. In not a few cases, with a very sore surface, denuded of its epithelium and oozing, the powders alone,



or combined with starch in different proportions, will prove very effective. Oleates ought to be avoided,—they irritate the skin and produce eruptions.

As the skin is thin and succulent, and the lymph-ducts quite superficial, large, and numerous in the young, substances will penetrate the skin quite readily. Ointments with that object in view must be prepared with animal fats, particularly with lanolin, to which ten per cent. of water must be added. Still, much friction may by itself irritate the surface and give rise to suffering.

In the very young, *ice* and *ice-water* applications are not tolerated a long time. Ice to the cranium, the bones of which are but thin, is liable to produce collapse; about the neck and occiput it is better borne and often beneficial. Warm *fomentations* and hot poultices are very beneficial in many morbid conditions of the trunk and extremities, but dangerous when applied to the head and not carefully watched. General *baths* are frequently required, local baths but seldom; foot-baths may be given while the patient is lying down, but hot fomentations are more readily made, and do not require the same amount of watching, nor are they equally objectionable to the young patient.

*Depletions* were frequently resorted to scores of years ago. Modern practice has learned how to do without them, though we may be willing to assume that they were more frequently indicated than many of us believe at present. At all events, it ought to be taken into consideration that there is but a single pound of blood in a baby of twenty pounds, and that a patient rapidly reduced by sickness is least able to stand a loss of blood ever so small. Thus a venesection will hardly ever be thought of; at all events, I hope never to repeat the opening of a jugular vein, practised by me in a case of convulsion depending on, and increasing, cerebral congestion, a quarter of a century ago. Local depletions were once more frequent, though the liability of the skin to inflammation and furuncle was well understood, and the excitement of the little patient was such, now and then, as to lead to an increase of the symptoms, and even to convulsions. Among the occasional drawbacks was also the possible loss of blood after the leeches had fallen off.

In such a case the local use of tannic acid, alum, perchloride or subsulphate of iron, digital pressure, or in bad cases the ligature underneath a harelip needle, which was inserted through the wound, were resorted to. The indications were bad and painful cases of pleurisy and peritonitis, and cerebral inflammatory diseases. In the latter, the mastoid process and the septum narium are the points on which the leech or leeches ought to be applied. It is the latter spot which I prefer, when I have the choice, in such rare cases of brain-diseases of infants and children in which I still feel justified to recommend a depletion. .

(To be continued.)

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## ON VENEREAL AND GENITO-URINARY DISEASES OF CHILDREN.

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(Continued from May Number.)

### VI.—DIAGNOSIS, PROGNOSIS, AND TREATMENT.

THE diagnosis in cases of congenital and hereditary syphilis may be divided into two groups,—those pertaining to the earlier stages, which are exhibited during infancy, and those of the late stage, which are exhibited during childhood and early and late adult life. In each of these the diagnostic points differ very materially.

Oftentimes at birth, or during the first few months of the infant's life, no symptoms whatever of the disease may be apparent. The child is born to all outward appearances perfectly healthy. But after a few months, in the larger proportion of cases before the lapse of six months, the child begins to show signs of ill-health, loses flesh and strength, becomes peevish and irritable, and oftentimes refuses to nurse. Shortly afterwards an eruption makes its appearance upon the body, some-

times macular, sometimes of a maculo-papular kind, and at the same time the child's cry differs from the usually healthy sound, and becomes hoarse, rasping, uncertain, and if an examination of the mouth and upper part of the fauces be made, the mucous membrane covering these parts is found to be the seat of opalescent exudations beneath the surface of the mucous membrane, which will sometimes break down and become converted into superficial ulcerations. At the same time, the nose exudes a thin, ichorous, highly-irritating discharge, which, upon exposure to the air, dries in the form of thin, yellowish or brownish crusts. The eruption in its earliest stage covers the entire body as well as the face, and is of a pink or reddish color, which rapidly becomes covered with thin, fine scales. Upon those portions of the body where the skin is thin, especially about the axillæ, the genito-crural folds, the cleft of the nates, and the popliteal spaces, these maculo-papules become moist, secrete a thin fluid, and are not covered with scales. These secreting papules are known under the name of mucous patches of the skin, and are akin to similar lesions which occur upon the mucous membrane of the mouth and throat.

Concomitant with this form of eruption, or immediately following it, bullous eruptions occur upon the palms of the hands and soles of the feet, and the bullæ, at first filled with a thin, serous fluid, rapidly become purulent, coalesce, and attain to an enormous size. This is the so-called pemphigus syphilitica neonatorum, a form of disease which may sometimes be apparent at the birth of the child. Under treatment these lesions yield rapidly, providing they have come on some time after birth, and then the child may enjoy for several months entire immunity from the syphilitic manifestation. If, as sometimes happens, the child is born with the evidences of its disease, the lesions most apparent are those of the bullous variety, and associated with these bullæ are lesions of the internal organs,—the lungs, the liver, the kidneys, or the spleen,—which belong to a more advanced type of the disease, and which nearly always prove fatal to the new-born child.

Associated with these external lesions the appearance of the child undergoes important and curious modifications. It loses its usual healthy appearance, no longer presents the full, robust



aspect of a healthy child, but becomes emaciated, wizened, and having the appearance of premature senility, and exhibits curious fissures about the angles of the mouth due to the presence of mucous patches of the cheek or secreting papules of the skin. Care must be taken in making the diagnosis of these various lesions of the skin not to mistake them for cases of simple eczema or for symptoms resulting from defective nutrition, dirt, and bad hygienic surroundings. Besnier (*Bulletin Médicale*, 1887) has called attention to lesions occurring in infants, which, while not syphilitic, bore a close resemblance to the syphilides, and he cites one case which is extremely interesting, and the details of which I shall give briefly.

The case was that of twins a few weeks old, who were nursed by their mother in part and partly brought up on the bottle. They presented the appearance of senility, were emaciated, cachectic, and showed upon the tongue, the lips, and upon the ano-genito-crural folds erythematous lesions with multiple excoriations. The mother herself, of sickly appearance, was the possessor of a semilunar fissure of the breast, and had in the axilla of the same side on which the fissure was seated a movable and indolent glandular enlargement. Besnier showed that these lesions both in the children and the mother were not syphilitic. In the children the labio-buccal lesions were not elevated, as is the case in the syphilitic lesions. Their base was erythematous, there was no evidence of a proliferation, they were seated only upon the tongue and the lips, and were the same in point of position in both children. The nostrils, the nasal fossæ, the naso-labial commissures, and the eyelids were intact.

These lesions were due to neglect, to a lack of cleanliness, and to the fact that the milk used in the nursing-bottle had become altered by fermentation. The lesions in the genito-crural folds and about the anus were due also to a lack of cleanliness, and were more of the character of erythema intertrigo than of true syphilides. The mother's lesions, Besnier showed, were not syphilitic, first, because when this fissure appeared on her breast the children were already suffering from the buccal lesions which have been described; second, she had had similar symptoms when she had nursed other children;

third, the appearances of the fissure resembled rather those of eczema of nursing women and not a chancre of the breast.

Acting upon the belief that these were not syphilitic lesions, Besnier instituted an exclusively local treatment, consisting of cleanliness, disinfection of all napkins used by the children, cleaning the lesions in both the mother and children with borated water, dressing of the ulcerations with a five-per-cent. borated preparation of vaseline, and instructions to the mother as to the quality and quantity of the milk to be given to the children. In eight days a complete cure of all the symptoms in both mother and children took place.

This case serves to show that lesions may occur in children, which, so far as their general appearance is concerned, very closely resemble syphilides, and which may mislead the surgeon unless care and attention are given in the examination and in the history of both the children and the mother, and yet which yield to local treatment, and which have nothing at all to do with syphilis. As a rule, if the treatment be efficient, these lesions entirely disappear and the child's general condition improves, so it regains a fair amount of health which may last for several months, to be followed later on by a return of the cutaneous and mucous symptoms, or by a more advanced stage of the disease. The bones may then become attacked in the manner already described in a preceding paper, or else nervous symptoms ensue which may cause the death of the child. If the nervous lesions are slight, the child perhaps recovers from these and exhibits a fair degree of health up to the period of puberty, when other symptoms make their appearance which belong rather to the so-called late variety of the disease and not to the earlier manifestations.

One point should be carefully borne in mind, and that is that the earlier lesions may entirely disappear and leave no trace behind them, so that if subsequent manifestations at the age of puberty or even later occur, they may be mistaken for the first symptoms of the disease, and the case is then regarded as one in which the syphilitic manifestations did not take place until several years after birth. This, in my opinion, is a mistake, for I believe that in all cases where the later lesions occur earlier manifestations have been present, which

have entirely disappeared, and that the late lesions are not the first ones. I am inclined to consider that all lesions which occur after the first five years of an infant's life should be classed among those of the late type, for the earlier lesions always make their appearance within that length of time; and, indeed, in the larger proportion of cases, within the first twelve months.

The symptoms which have been classed together under the name of syphilis hereditaria tarda are those which in the acquired type would be characterized as late or so-called tertiary syphilis, viz., diseases of the eye and ear, diseases of the teeth, diseases of the bones, of the nervous system, and ulcerating lesions of the skin and mucous membranes. To present a typical picture of a person who is the subject of inherited syphilis, I cannot do better than quote the words of Augagneur:

"Had I in a few words to present the ideal clinical type of late hereditary syphilis, I should select a young girl eighteen or twenty years old, whose eyes should present traces of parenchymatous keratitis; the teeth should be eroded and crescentically notched, at the same time they should be small and irregular; the hearing should be partially or totally lost in consequence of frequent attacks of otorrhœa; the genitals, possessing all the attributes of virginity, should be small; the mons veneris and the axillæ should be smooth; the mammæ without prominence; and menstruation should scarcely be established. Add to these all the tertiary lesions you please, and you will have before you a complete picture of late hereditary syphilis. . . . To the trilogy of Hutchinson—interstitial keratitis, defective incisors, and otorrhœa—I propose to add two other signs,—general congenital atrophy and general arrest of development."

It is this peculiar arrest of development, conjoined, of course, with other symptoms which serves to direct the surgeon's attention to the character of the lesions which may be presented to him, whether they be of the skin, of bone, or of the nervous system. The patients nearly always present the appearance of being much younger than they really are so far as stature, mental power, and physical development are concerned; and when in addition to these the appearances of the



teeth or of lesions of the eye are taken into consideration, the surgeon may often arrive at a tolerably accurate diagnosis, notwithstanding the absence of all previous syphilitic history either in the individual himself or in his parents. As I have already pointed out in a previous paper, no single lesion can alone be depended on absolutely in making a diagnosis, but the surgeon should take all the symptoms together, and notably those which point towards a defect in or arrest of development. In some cases, however, the patients may present no signs whatever of an arrest of development. They may, on the contrary, be of good growth, of fair mental power, and, so far as their general appearance is concerned, may not lead the surgeon to suspect inherited syphilis. The character of the lesions themselves, then, have mainly to be depended upon, and if they belong, as they nearly always will, to a late or advanced type of the disease, the question may be fairly entertained whether the lesions are not those of an acquired rather than hereditary type, and it is upon this point that I wish to call more particular attention. A robust patient may come under the surgeon's observation for some ulcerating lesion of the skin, some necrosis of the bones, or some affection of the testicle, which the surgeon, if left to himself, would be inclined to attribute to the acquired type of the disease were it not for the fact that the patient denies absolutely having contracted syphilis at all. So far as the appearance of the patient is concerned, there is nothing to induce the surgeon to positively decide in favor of hereditary disease, and, if in cases where the symptoms to which attention has been called are absent, I think the surgeon is justified in regarding the case as one of acquired rather than hereditary type. And it is in just such a case as this, where the evidence of an arrest of development is entirely absent, that the surgeon would be justified in rejecting the idea of hereditary syphilis.

*Prognosis.*—The prognosis in cases of inherited syphilis is generally bad for two reasons,—first, because the larger proportion of children born with this disease die within the first year of extra-uterine life; and, second, because those who survive until puberty are usually debilitated and readily succumb, if not to their inherited disease, to intercurrent

affections, which under ordinary circumstances would not prove fatal.

A table containing the records of the births of syphilitic children at the Moscow Hospital in Russia, from 1860 to 1870, inclusive, with deaths from that cause, shows how fatal the disease is in children.

In 1860, of 224 children, 148 died, a percentage of 66.

In 1861, of 240 children, 150 died, a percentage of 75.

In 1862, of 140 children, 93 died, a percentage of 67.

In 1863, of 150 children, 123 died, a percentage of 82.

In 1864, of 198 children, 139 died, a percentage of 70.

In 1865, of 171 children, 131 died, a percentage of 70.

In 1866, of 165 children, 124 died, a percentage of 70.

In 1867, of 174 children, 131 died, a percentage of 69.

In 1868, of 208 children, 152 died, a percentage of 73.

In 1869, of 184 children, 116 died, a percentage of 63.

In 1870, of 184 children, 118 died, a percentage of 65.

From these statistics it will be seen that the highest percentage is 82, the lowest 63, calling it, in round numbers, a general average of 70 per cent., and it is very evident indeed that inherited syphilis is a fatal disease.

Suppose that the child survives the first ten or twelve years after birth, it then arrives at a period which is peculiarly open to attack from the symptoms of inherited disease of a serious nature, such as the lesions of internal organs, of lungs, kidneys, and liver, or from the exhaustion consequent upon attack of ulceration of the bones or of hemiplegia and paraplegia; and even suppose the child to be fortunate enough to recover from these symptoms, if it be attacked with intercurrent disease the chances of recovery are very small, because its powers of resistance have been continually undermined by the destructive tendencies of its inherited disease. Hence it may be said that the prognosis in cases of inherited syphilis is bad, and that probably but very few children born with this disease survive beyond the period of puberty.

*Treatment.*—Various methods of treatment have been instituted for the relief and cure of inherited syphilis, and they may be divided into two broad groups,—indirect and direct treatment. The former consists in the introduction of reme-

dies into the child's stomach through the medium of the milk of the mother or nurse, and the second where the drug is given to the child directly by the mouth or through the medium of the skin. The indirect method is usually employed in this manner:

The nurse or the mother is put upon an active mercurial treatment under the belief that a certain proportion of the drug will be eliminated through the milk, and that in this way the child will be able to receive its medicine in sufficient amount to bring about a cure. But an examination of the milk of persons who have been treated even up to the point of salivation shows that but little, if any, of the mineral is excreted through the milk, and children who have been put upon this method of cure have received scarcely any benefit. As regards this method of treatment, therefore, we may say that it is of no practical service, and should never be resorted to where other and more efficient means can be adopted.

The direct method is the only one that offers a fair chance for the child's recovery, and it may be instituted in one of two ways,—either by administering the drug to the child through the mouth or by the medium of the skin. Of these two methods the administration by the skin is the one to be preferred, and the plan most worthy of adoption is to spread from one to two drachms of mercurial ointment upon a cloth, which shall be bound around the child's body, directly in contact with the skin, and should extend from the axillæ to the hips, care being taken that the axillary and genito-crural folds shall not be irritated by the mercurial ointment. This should be worn by the child for two or three days, when it should be removed, and the child's skin gently washed with warm water and soap. A fresh supply of ointment should be applied to the cloth, and the cloth then again bound upon the body of the child. This is better than making inunctions upon the child's trunk or upon the limbs, as it is less likely to produce eczema or to irritate the skin; the warmth of the child's body causes rapid absorption of the drug; it does not interfere with the child's nursing, nor is it so apt to derange the stomach and intestines as is the case when the drug is given internally. It must be borne in mind that syphilitic children generally tolerate mer-



cury very well, and will take quite large amounts without showing any of the deleterious effects of the drug.

If it be considered advisable to give mercury by the mouth it may be administered either as a powder, the ordinary *pulvis hydrargyri cum cretâ*, which may be deposited upon the child's tongue, and will readily be taken by it, or else it may be given in the form of the bichloride, in doses of from one-one-hundredth to one-fiftieth of a grain, rubbed up with sugar of milk, or administered in sweetened water or milk and water. The powdered preparations are far the best. Sublimate baths are sometimes administered, but the effect is frequently to produce debility, and they must consequently be used with caution in the case of infants and young children.

In the earlier months of treatment iodide of potassium is seldom, if ever, called for, and its administration should be reserved for lesions of a later type, more especially those of the ulcerative variety.

Under this method of treatment the child will often recover from its earlier symptoms, especially if they have been of a mild type, and even in cases where the lesions are tolerably severe, a proper and thorough course of mercurials, directly administered, offer the child the best chance for recovery. In the lesions of the late type, iodide of potassium may be administered, either alone or conjointly with mercury, in the same manner as it is used for acquired syphilis, and it is in these cases that the iodide of potassium will oftentimes produce the most brilliant and satisfactory results. To be of any service, however, the drug should be given with quite a free hand, for these later lesions of syphilis are oftentimes extremely rebellious, and will not yield to small doses of the salt. From ten to thirty grains at a dose, large as the amount may seem, are of more service than two-, three-, or five-grain doses. And the surgeon should be prepared to increase his dose if circumstances require it, or to suspend its use if toxical symptoms ensue. But, as a rule, syphilitic children and young adults, suffering from this type of disease, stand the use of iodide of potassium remarkably well.

In addition to this, mercury may be administered either in the form of the protiodide, which is the one best borne, or of

the bichloride; but this latter preparation is so often apt to disagree with the stomach, and to produce diarrhœa and other intestinal disturbances, that its use had better not be resorted to, unless the other preparation of mercury, the protiodide, cannot be used.

In addition to the constitutional treatment, local treatment will very often be required for the relief and cure of some of the symptoms. In cases where the mouth and tongue are attacked with mucous patches, local applications of a weak solution of nitrate of silver, from one to five grains to the ounce, may be applied daily in the case of infants. As gargles and mouth-washes cannot be used in these cases in addition to the employment of nitrate of silver, the lesions may be lightly pencilled over with a preparation of tannin and glycerin in the proportion of ten grains to the ounce, or with a weak solution of sulphate of zinc, one to three grains to the ounce of water. This should be done several times during the day, and the infant's mouth kept as clean as possible. In ulcerations or excoriations of the nasal fossæ the same methods may be employed as are used in the lesions of the mouth and tongue. In cases where ulcerations are present on the body, if there be no sign of the extension of the ulceration beneath the crust which covers it, it is better, perhaps, to leave the crust in position, as it makes the best dressing for the ulceration beneath; but if there be any signs of extension, the crust should be gently detached by poulticing or by soaking in warm water, and the ulcerations themselves touched with a weak solution of nitrate of silver, of the strength above advised, and dressed with the mercurial ointment diluted with an equal proportion of vaseline.

In cases of pemphigus the bullæ should be emptied of their contents, and if the epidermis covering them has become detached, they should also be dressed with the diluted mercurial ointment; but, as a rule, very little local treatment will be required for these lesions, the bullæ being seldom attended with much, if any, ulceration. Lesions about the genito-crural fold and the anus should be kept clean and dry. They should be repeatedly washed, and the napkins which the child uses should be frequently changed. After the parts have been

washed and thoroughly dried, they should be freely powdered over with calomel and bismuth, in the proportion of one part of calomel to two or three of bismuth, and after each change of the napkins the powder should be gently removed by washing and reapplied. If the mucous patches at this point show signs of ulceration or breaking down, they should be touched gently with a solution of nitrate of silver in the proportion of five or ten grains to the ounce of water; but in the larger proportion of cases, if the parts are kept clean and dry, but very little else is required.

In the later stages of the disease, particularly where ulceration is present, the local treatment oftentimes plays an important part. Where ulceration of the soft palate or of the throat is present the best application is that of the nitrate of silver, of the strength of twenty or thirty grains to the ounce, applied every second or third day, and the parts should be frequently gargled with solutions of alum, tannin, sulphate of zinc, or myrrh. This latter, in the dilute form of a drachm to six or eight ounces of water, makes a very good mouth-wash in these cases of ulceration, and will frequently stimulate indolent or foul-looking sores of the mouth or throat.

Where necrosis occurs and there is abundant suppuration, the best method of treatment is by the application of mercurial ointment spread upon kid or cloth and applied directly to the part, care being taken, of course, to keep the wound thoroughly clean by frequent syringing with carbolated or weak bichloride solutions.

Two very important questions in these cases are, How soon should treatment be instituted, and how long should it be continued? To the first of these the answer is that treatment should be begun as soon as the symptoms have made their appearance. Thus, in the case of a child who, although born of syphilitic parents, yet shows no symptoms of the disease, treatment should not be instituted immediately after birth. It is better to wait until the symptoms make their appearance, for two reasons: First, in order to judge of the severity of the disease; and, second, in order to prevent the delay of symptoms by the premature use of mercurials. But as soon, however, as any symptoms have made their appearance, then treat-



ment should be instituted at once, and should be continued until all manifestations of the attack have passed away.

This, of course, applies only to those cases where the symptoms of inherited disease are mild at the outset.

When the child is born with manifestations of the disease, and especially if they be of a severe type, prompt and vigorous treatment should be at once instituted; but, generally speaking, in these cases the child succumbs to the severity of the attack before any method of treatment will be of much avail.

In the later inherited stage the treatment should be commenced as soon as any symptoms occur, and should be continued until their entire disappearance. It should then be intermitted, and the child placed upon tonics and carefully watched for several years, in order to see if subsequent symptoms recur, and upon their recurrence treatment should be again renewed, and vigorously carried on as long as any symptoms remain.

This intermittent method of treatment is preferable to a continued treatment of several years, as it prevents the child from becoming accustomed to the remedies, and it also gives the surgeon an opportunity of judging whether the case is likely to progress to recovery or whether the treatment is merely palliative.

In some cases, in the more advanced types of the disease, both mercury and iodide of potassium seem to lose their effect, and the patient, instead of improving under their administration, loses ground and becomes worse rather than better. In these instances the treatment by mercury and iodide of potassium should be at once discontinued, and the patient should be placed upon tonics and restoratives, and everything done to build up the general health. But in these cases little can be done, as they are nearly always attacked with amyloid degeneration of the internal organs, inducing deep-seated cachexia, and nearly always leading to a fatal result, not perhaps directly due to the disease, but indirectly from marasmus.

*Preventive Treatment.*—It is oftentimes important, in addition to the methods of treatment which have been already detailed, to prevent symptoms from extending from the child to those about it, such as to the nurse or to its own relations.

Notwithstanding the fact that for many years the contagiousness of some of the symptoms of inherited infantile syphilis was undoubted, it is pretty clearly proved at the present day that syphilis may be conveyed from the infant to others by the medium of the secretion of its mucous patches, and care should be taken to limit, as far as possible, all sources of danger in this direction. The surgeon should be careful to impress upon the minds of those having the care of the child that absolute cleanliness is an important point in the question of treatment, and that no person should be allowed to kiss the child, or in any way to convey the secretions from its mucous patches to sound and healthy persons. For that reason the napkins used by the infant should be put at once into water containing a solution of the bichloride of mercury, and should be washed separately from the rest of the family linen. The child's person should also be kept scrupulously clean by repeated changing of the dressings in cases of ulceration, and by removal of the dressings as frequently as may be necessary, and everything connected with the local treatment of the child should be reserved entirely for its own use, and should never be employed by the other members of the family.

Should the child be fortunate enough to recover from its symptoms, it should be carefully and constantly watched, to see that no fresh symptoms supervene, and the moment they occur they should be at once treated with the same care as at first. If these rules are rigidly adhered to and carefully carried out symptoms which might be of importance, not only as regards the child, but also those about it, may be checked at the outset, and perhaps limited in their course and duration.

*Feeding.*—In cases of syphilitic children it is often an important question to decide as to the best method of feeding them. Without doubt, the infant's best food is human milk, but in many cases the mother is unable to suckle her child, and the point to be determined is whether an artificial method of nursing should be adopted, or whether the child should be transferred at once to a wet-nurse. If this latter plan can be adopted, it is, of course, much the better one, but no wet-nurse should be employed without having the danger of infection

fairly laid before her, and the risk that she runs in assuming the care of such a child. In the majority of cases no sound woman would be willing to run the risk, and it then becomes a question as to the best method for artificially bringing the child up. If it be decided to feed the child by the bottle, the composition of the milk used should be brought as nearly to that of human milk as possible. It should be used fresh every time, carefully warmed, diluted, and sweetened, and the child should be fed at regular intervals, both during the day and night, in order to insure a sufficient amount of nutriment. The best that can be said for it in these cases is that it is a poor substitute for the natural nutriment of the child, and that in nine cases out of ten it proves of very little service.

16 WEST THIRTY-SECOND STREET, NEW YORK CITY.

(To be continued.)

## TYPHOID FEVER IN INFANCY.

*A Clinical Lecture,\**

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AUTHORITIES have not as yet arrived at a consensus of opinion in regard to the age at which typhoid fever is most apt to appear. Physicians do not agree as to whether it is present at all ages, even in the new-born, or not. Charcelay† reports two cases. The first occurred in a boy eight days after birth, and resulted fatally. The autopsy revealed tumefied and injected Peyer's patches and follicles; those near the ileo-cæcal valve were ulcerated, the peritoneum was injected, and the mesenteric glands enlarged. Nanzenia‡ reports the post-mortem examination of a foetus at seven months with such lesions of the Peyer's patches as we are accustomed to associate with typhoid fever, and Heckel adds the case of a girl, thirteen days old, who contracted a fever while in the same house

\* Reported by W. A. Edwards, M.D.

† Arch. Gén. de Méd., 1860.

‡ Acad. des Sci., 1841.



with an adult case of typhoid, the post-mortem revealing characteristic lesions. We could thus multiply cases from the literature of the subject, but to no purpose, as sufficient has been said to demonstrate the fact that the very young infant may present a fever which in all its manifestations closely resembles typhoid, but we must conclude with Parrot that if typhoid fever does exist in children under six months of age the cases are exceptional, and, furthermore, that there is a doubt attending the diagnosis of most of those on record.

After six months of age there is certainly no doubt about its appearance, the more so, as we have the word of so eminent an authority as Murchison, who noted a death at this age. The case was the youngest fatal example that had occurred in thirty-three years in the London Fever Hospital.

Hérard records a case, dying at seven months, the diagnosis being confirmed by post-mortem examination, and Berhen records a case of death at fourteen months. It is, however, but fair to state that Friedelben, Bouchout, and Jules Simon do not consider that the disease ever exists among nurslings.

As a further illustration of the relation of age to typhoid fever we quote the appended tables. Archambault noted 165 cases with the following results:

	Cases.
At 21 months.....	2
From 2 to 4 years.....	9
“ 4 to 6 “ .....	17
“ 6 to 8 “ .....	20
“ 8 to 10 “ .....	23
“ 10 to 12 “ .....	41
“ 12 to 14 “ .....	53

Henoch's results in 82 cases are:

	Cases.
Up to 1 year.....	2
From 2 to 5 years.....	21
“ 5 to 10 “ .....	59

And Stephens, in 63 illustrations of the disease, notes but one case under one year of age; from the third to the sixth year he observed 28 cases; and from the sixth to the tenth year, 24 cases.

In the Berlin statistics for 1878 are noted 623 deaths from typhoid fever of all ages, 98 being under five years of age.

*Sex.*—More boys are affected than girls. Bogenski is about the only writer who differs from this statement. Taupin, in 121 cases, met 86 boys and 35 girls; Rillet and Barthez, out of 111 cases, 80 boys, 31 girls; and Archambault, out of 181 cases, 112 boys, 69 girls.

*Etiology.*—It is difficult to discuss special causes of typhoid fever in young children; it may be, as in the adult, due to exposure to the typhoid poison; rarely are isolated cases of typhoid fever observed in the very young; for example, Rillet observed in a village near Geneva that all the children were taken ill during three or four months of the year. It is, indeed, a difficult matter to ascertain whether a child can become affected by the milk of its mother. In order to definitely settle this question it would be necessary for the child to be nourished with milk without coming in contact with the mother or nurse.

In regard to the symptomatology of this affection in childhood we can with Parrot consider it under different headings. The first of these considered by Professor Parrot is that appertaining to the digestive apparatus, and the most important and earliest symptom noted is sore throat. This is characterized by enlargement of the tonsils and redness over the palate and pharynx. At times these regions are covered with exudations, and the pain is severe, especially with deglutition. The tongue in children, which is usually large and moist, is covered with a coating, more or less pronounced, down its centre, and at the base exceptionally it is dry, and has cracked fissures.

The vomiting, which is so frequently present in the beginning of febrile affections in children, is here also noted. West considers this a grave sign, though Parrot differs, and thinks it of no more importance than in scarlet fever or in measles.

As regards the passages, of course they greatly differ according to age and form of nourishment. In children they are simply loose and fetid, the same as in ordinary enteritis, either of a bilious or mucous type, containing curds and large quantities of water.

From the eighteenth month to the third or fourth year, and probably later, diarrhoea is rare, that is to say, it is not a con-

stant symptom. The matters are then solid and constipation may exist. Diarrhœa may follow vomiting or the use of a laxative, and is then less fetid. The matters are very fluid, and, when collected, divide themselves into two portions, the fecal matter falling to the bottom of the vessel, the water remaining on top, being almost transparent. This difference is to be accounted for by the difference in age of the children, in addition to the fact that in the older ones, Peyer's patches are rarely affected, rarely ulcerated; the intestinal accumulations remain solid.

Tympany of the abdomen is rarely of diagnostic importance, inasmuch as it is found in very young children. Later the abdomen becomes supple or very slightly distended; frequently it does not change whatever or indicate special disease. The right iliac fossæ is rarely painful except upon pressure, the lesions of the bowel rarely occupy this seat alone; and, again, children do not localize pain as a rule.

In regard to the enlargement of the spleen, Vogel declares that splenic enlargement takes place and Parrot believes that it is a constant attendant upon fever, and therefore the phenomenon is not of great importance, as enlargement of the spleen will take place in all diseases, especially pyæmic affections. The appetite is rarely diminished in nursing babes. They usually nurse with avidity, on account of the thirst.

*The Appearance of the Skin.*—The peculiar eruption of typhoid fever is more or less absent, especially in very young children; and, according to Cadet-Gassicourt, the spots are found in only about two-thirds of all cases. They are less typical than in adults, less striking, larger, and more scaphoid. The eruption is noted on the abdomen, the sides of the trunk and on the buttocks, and upon the upper portion of the thigh. Usually but one or two at a time are noticed, seldom in larger numbers. Parrot observed two cases, however, in which they were confluent and extended over the whole body.

Sudamina are usually only found in the lower part of the abdomen in children, and only in those who have passed their first dentition; slight desquamation usually occurs as the fever subsides.

Bed-sores are extremely rare, and are never seen in nursing



children, but in them erythematous patches may be noted, also excoriations caused by the discharges.

*Circulatory Apparatus.*—Epistaxis is as rare in children as it is frequent in adults; according to Parrot's observation, it always occurs later in the disease in children than in adults; in thirteen cases, the three who had it were ten, eleven, and thirteen years of age; in the last two, it appeared on the fourth and eleventh days, respectively. Slight malena may occur, but intestinal hemorrhage is exceptional.

Parrot relates the case of a child three years old who died from a sudden intestinal hemorrhage.

In regard to the *pulse* in this affection during early life great uncertainty exists, as the slightest change will modify its rapidity and rhythm; dirotism is exceptionally rare. Bogenski and Vogel have seen but two examples of it in ten years. Parrot noted it once in a child under fourteen years.

The rapidity of the pulse is not always in direct ratio to the temperature; according to Gerhardt, a high temperature without acceleration of the pulse is diagnostic.

As regards pulmonary troubles there is usually a bronchitis more or less pronounced; rarely do we meet congestion of the lungs.

Examination of the *urine* in the very young is difficult on account of the inability to secure a sufficient amount; albumen is sometimes present, but not constantly; it is more apt to occur in children after the second dentition. In fact, according to Parrot, a general statement may be made that typhoid fever bears less upon the red corpuscles of the blood than any other acute malady in children, and that the urine does not contain those elements which are the result of disintegration; he further refers to the thesis of Roben, Paris, 1877.

Nervous troubles are generally less intense in children than in adults. Nursing babes are more or less totally exempt from them; there may be some stupor existing apart from the babe's usual sleeping hours. At three years and older the nervous system seems to be more or less affected. Headache is rarely pronounced; it either does not exist or the children are unable to locate the pain. At this age there is more or less stupor

during the day, never, however, becoming comatose. Mild delirium is more frequent, but it usually arises at night. Parrot has noted it in three instances. Talking in the sleep is frequent. In some cases convulsions may arise. West has noted hemiplegia, and meningitis has been observed. On the whole, however, we may conclude that early childhood shows a remarkable immunity from the nervous complications of typhoid fever.

The temperature must be frequently taken in children of an early age, more particularly as the pulse is not a very reliable guide. The rectum is probably the most reliable site for the insertion of the thermometer. The record must be kept for a long time. We will usually note three prominent states of temperature,—an ascending, a stationary, and a descending period. Many conditions may affect the temperature-range, as we know is the case in adults. These new conditions may be either complications, sequelæ, or new diseases engrafted upon the previously-existing disorder.

*Course of the Disease.*—In infancy typhoid fever makes rapid progress, and its duration is less than that of adults. A case is recorded, for example, of a child eleven years old, in whom the disease lasted but six days. D'Espine reports a case with all the characteristic symptoms, which lasted but ten days. These are the cases that stand on the border-line between simple continued fever, gastric or intestinal catarrh, and mild typhoid fever. Bogenski considers that typhoid fever may occasionally assume the form of these diseases.

*Relapses.*—Vogel regards them as rare. Hensch, on the contrary, believes that they are not. Parrot refers to two cases, one a boy of one year, the other a girl of eleven years. In the first case the symptoms were recognized three days after the cure seemed attained; in the second case, six or seven days after cessation of the fever.

Relapses must not be confounded with simple prolongation of an attack, which may be extended to forty or fifty days. Parrot observed in a young girl that the fever existed for forty-two days. Several crops of typical eruption arose.

In young children there is no stated period between convalescence and the diseased state; in older ones the period

becomes more defined. The child may remain for several days unconscious of its surroundings. Little by little it will return to itself and recognize those about it, and gradually recover, as from a dream.

As regards the body weight, which is a matter of great interest, it is found that it increases for two or three days in the early days of the fever, explained by Gerhardts as follows: The secretions are diminished by the fever, constipation exists, and the kidneys do not act well; the water accumulates in the body. Turgescence of the blood-vessels exists. After this there is a gradual loss of weight. Nursing children show this loss as the fever increases. From this the gain becomes very great during and immediately after convalescence.

*Complications.*—Among the various complications we may speak of bronchitis, which is more or less intense and is apt to be tenacious; broncho-pneumonia may supervene. In some rare cases the attack may begin with croupous pneumonia, masking for a time the typhoid element, and then run on and exist as a complication. In Parrot's experience this form is more frequent in children than in adults.

Gangrene of the mouth, pharynx, or larynx may arise; parotitis is somewhat rare; aphasia may arise; Gerhardts has noted it about the third week in a boy between ten and eleven years; paralysis is rare. Sudden death from this disease in childhood is also of extreme rarity. Perforation of the bowel is more rare in children than in adults, and, though intestinal hemorrhage is not a common occurrence, it is by no means to be considered as a sign of fatality.

*Prognosis.*—In new-born children, according to D'Espine and Picot, the fatality seems great. Stephens lost ten out of one hundred and forty-eight; Franque, ten out of one hundred. Parrot, on the other hand, places the prognosis of this disease as of decidedly less gravity than either measles, scarlet fever, pneumonia, or pertussis. The disease runs a much shorter course in the young, the average being about ten days.

*Treatment.*—We can receive Parrot's opinion as the guide to the treatment of the French school of the day, in which he cautions against over-medication. The same general rules as to the personal hygiene of the patient that we have been ac-



customed to adhere to in adults will also apply to children. The author above quoted does not seem to be in favor of any very active treatment, and, judging from the tenor of his article, he rather leans toward the use of a cold bath as the best means of reducing temperature. Quinine will play the same rôle in the child's case as it does in the adult's. Haggendach gives the following rule for its administration:

Child	1 to 2 years.....	70 centigrammes to 1 gramme.
"	3 to 5 "	.....70 " to 1½ grammes.
"	11 to 15 "	.....from 1 to 2 grammes.

I think these doses very much too large; indeed, I rarely attempt the reduction of temperature by quinine alone. I prefer other means, and then by suppository give the quinine.

In all febrile affections the necessity of exercising great care to prevent gastric irritation must be ever uppermost in our minds. We must endeavor to promote secretion and relieve the intestinal tract of the accumulation within it without irritating it by an active purge. For this purpose our own treatment has been the administration of one-twelfth of a grain of calomel with bicarbonate of soda, or, if the bowels are irritable, giving half a grain of Dover powder with each dose. If, however, the disease has started off with a looseness of the bowels, it would then be better to substitute small doses of hydrargyrum cum cretâ. The body should be sponged off at least twice a day with a solution containing either Labarraque's solution, vinegar, or alcohol in small quantities. If the child has been accustomed to its daily bath, this may still be continued. It is, however, to be gently placed in the tub so as to avoid all excitement, allowing it to remain but a few moments, then placing it between warm blankets and gently drying. The water temperature is to be from 65° to 75°.

The food is to consist of milk, previously boiled or well scalded, to which has been added an alkali, to prevent the formation of firm, hard curds. We consider this a matter of very great importance in the treatment of all febrile affections of children when the alimentary canal is involved, and since the introduction of peptonizing agents it is almost an essential to the thorough carrying out of the treatment of this disease

to peptonize all the milk which is given to children, or should milk not be available for the case, broths, particularly chicken broth, which is usually so acceptable to children, should be given instead. Peptonoids are very valuable in this connection, also freshly-expressed beef-juice and wine-whey.

There seems but little indication, if we are satisfied early in the attack that the disease is typhoid fever, for the administration of medicine, though, unfortunately, it is a condition difficult to diagnose. We are constrained to think that overdosing in the early part of the attack influences in a measure the type of the disease. Certainly our experience has warranted the belief that the tendency of most of the affections of childhood is toward recovery, provided the child is placed under circumstances which will insure careful regimen, diet, and rest.

There is no disease where *common sense* plays such a part in the treatment as typhoid fever. It must be confessed that the impulse "to do something to cut it short" is irresistible. The physician should be a pilot, zealously watch his little patient, avoid the Scylla of high temperature, which surely kills, by baths, evaporating lotions, and such temperature depressants as antifebrin, antipyrin, with alcohol in moderate quantities, should the latter weaken the heart's action, as I have seen it do; nor should he be caught by the Charybdis of overfeeding or overstimulation, an unfortunately too common error at the present time. The little patient *must not be stuffed*. And the misfortune of excessive stimulation at the onset of the disease must be avoided. Alcohol in many, indeed most of the cases, had better be avoided *altogether* except in convalescence, and then only given as wine-whey or weak whiskey and water as a tonic. Alcohol is most valuable in profound exhaustion, collapse, or "blood-poisoning;" nothing that we know of more so. It is a powerful remedy, and the indications for its use are very evident. The same with food. Give the easiest assimilated food, in small quantities, and frequently repeated. Avoid overloading the stomach and intestines, and the consequences, which are irritation of the mucous membrane, accumulation of gases, intestinal catarrh, fermentation, and the result, hemorrhages or ulcerations and perforations. Feed

only to maintain strength, to supply waste. This, I believe, embodies all in the treatment of this dreaded disease (one of the avoidable diseases which *pure* drinking-water would abolish). To the above may be added, *pro re nata*, a little corrective medication occasionally, such as an opiate or sedative, to quiet the nervous system; dilute mineral acid, to act as an astringent and to encourage secretions; the vegetable acids as refrigerants; bismuth and pepsin, or nitrate of silver for local use; oil of turpentine or cajuput for flatulency; and, during convalescence, iron, quinine, and strychnia.

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## ROUND SHOULDERS.

BY CHARLES F. STILLMAN, M.S., M.D.,\*

New York.

THE case which is presented to you to-day is one of a very common type, and one that will be met with quite often in practice. By far too large a proportion of the adults of the present generation are afflicted with this deformity, to which the name round shoulders has been given, as expressing most nearly the condition to the ordinary observer.

More strictly speaking, this deformity should be called the antero-posterior curvature. It seems to increase in proportion with the indolent tendencies of civilization. It is easily remedied, and even in its advanced stages the condition can be greatly improved by proper treatment.

In order to understand the curvature itself, there are certain principles involved which must first be studied.

The natural development of the human body is symmetrical, or nearly so. To a certain extent this is modified by the pernicious habit of exercising one side of the body more than the other, this being especially marked in the use of the upper extremities, those using the right hand habitually possessing greater development of the right side; while those using the

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\* Read by title before the first annual meeting of the American Orthopaedic Association in June, 1887.



left hand possess more development of the left side of the body, it being rare to find people who are ambidextrous, which condition renders the body more nearly symmetrical.

The spinal column is composed of a number of vertebræ, between which sufficient motion exists to permit bending in all normal directions, and these vertebræ are prevented from irregular or excessive movement by ligaments; and these movements are controlled by a muscular system which responds both voluntarily and involuntarily to the action of the nervous system.

The maintenance of the body's gravital centre depends upon, first, the perfect development of muscles; second, upon the perfection of their tone; and, third, upon their complete obedience to the action of the nervous centres.

The muscles governing the spine are under the influence of two kinds of nerve-force: first, voluntary; and, second, involuntary.

Voluntary impulse is demonstrated in many ordinary actions, such as stooping, bowing, bending, and twisting the body, this being consciously and intentionally made; while the involuntary impulse, which controls the balancing of the body and its maintenance in an erect position, is entirely irrespective of volition or consciousness, and it so stimulates the spinal muscles that they constantly keep the centre of gravity of the body at the proper point, and cause its restoration should it by accident be changed even for a moment.

It is to the perfectness of both the voluntary and involuntary nervous forces that the maintenance of this equilibrium in a healthy body is due.

Loss of shape, or deformity, will arise from one of two causes: either from abnormalities in the construction of the skeleton itself,—for example, the shortening of the leg in infantile paralysis, in which case the attempt of the body to balance itself on an uneven base brings about deformity,—or from irregularities in the development and action of involuntary muscles.

In its natural condition the spine exhibits several well-known curves, constituting the pose of the neck, the moderate roundness of the dorsal region, and the incurvation of the

loins; but in the deformity we are considering to-day these natural curves have become exaggerated and symmetry disappears.

Heather Bigg divides the natural body into a mathematically-erected structure, with a triplet of arches, the lowest of which is formed by the legs and feet. This he calls the *base*.

The *spine* itself constitutes the second; and the upper mass of the body, comprising the head, arms, and trunk, he calls the *burden*, this burden being, in a natural and healthy condition, evenly disposed, bilaterally balanced, and arranged symmetrically around the spine both in weight and form.

These three factors—*base* below, *spine* in the middle, and *burden* above—form together the integral whole of the body, and are kept in the proper position, one above the other, by muscles obeying gravital law, and are relatively reliant on each other, one above the other; and if anything directly affects the normal condition of one of these factors, it will also affect indirectly the condition of the others.

That author, therefore, argues that the development of this curvature of the spine can be of *intrinsic* origin, and arise from alteration of the spine itself, or that, while the spine is mechanically perfect and healthy, the other factors—that is, the base below it or the burden above being abnormal—may so react upon the spine as to cause a deformity in it; and in this case the deformity is of *extrinsic* origin.

The curvature has several synonyms, cyphosis being perhaps the best, since it means round- or bent-backed. In the French we have *lordose*; in German, *Spitzbuckel*, *winkelformige knickung der wisbelsaule*, *Ruck verbiggung der wisbelsaule*; in English, spinal curvature or posterior deformity.

In variety, it may be either *complete* or *partial*, or may be divided, according to the time of life in which it appears, into *infantile*, *juvenile*, and *senile*, and it should not be confounded with the posterior deformity attending caries of the vertebræ.

With regard to its causes, some writers look upon round shoulders as exaggerations of the normal spinal curves. There are many exceptions to the rule.

At birth there are no curvatures, and it is only at a later period, when the child has been accustomed to sit or stand,

that the antero-posterior curvatures are developed, these being produced by the muscular action which maintains the equilibrium of the spinal axis, which the weight of the burden—that is, the head and upper extremities—tends constantly to displace. These antero-posterior curves become gradually formed and increase with the child's age.

We thus quickly obtain the antero-cervical curve, the posterior dorsal, and the antero-lumbar.

The principal *causes* in the production of this curvature are, obviously, a constant disturbance of the normal gravital centre and the unsymmetrical action of surrounding muscles, which, being allowed to continue indefinitely, lead to severe and permanent changes in the bones.

Many inherit the tendency, or it may be due to mechanical causes acting on a spine affected with rickets, while the senile forms may be introduced by rheumatism or gout.

It usually arises from general debility of the system, and is liable to overtake any one in times of great constitutional weakness, and more particularly those in whom the growth is yet incomplete. Children in the years between puberty and maturity, and especially those whose growth has been very rapid, are most frequently the subjects of this deformity; as are also convalescents from severe illness or those suffering from collapse after great mental or nervous exhaustion.

The pathological changes in this deformity are usually confined in the spine to the anterior parts of the vertebral disks and bodies, the transverse processes being separated from each other and the laminæ flattened and shortened; in some cases, also, the spinous processes are separated abnormally.

The vertebræ most commonly affected are the fifth, sixth, and seventh dorsal, and in some cases the intervertebral disks measure only one-half, or even less, of the usual thickness. If this deformity be of long duration, and in some of the *senile* forms, the intervertebral disks may have disappeared entirely, and the bodies become ankylosed both centrally and peripherally. In the former, bony ankylosis occurs between the laminæ, articular processes, and the spinous processes, while in peripheral ankylosis the anterior common ligament becomes ossified without primary changes in the bone itself.



Changes are also produced in the thorax, the vertical and transverse diameters of which are diminished, the antero-posterior diameter being increased; the intercostal spaces are diminished, the ribs becoming more or less straightened,—the upper ones being nearly perpendicular to the spine, while the lower ones are oblique,—and the sternum is usually convexed in front, but in some cases it may be depressed in its middle part.

In *infantile* curvature, which is most often due to rickets, the most frequent seat of the deformity is in the dorsal-lumbar region, while in the *juvenile* form the middle of the dorsal region is most commonly affected.

In this case the head is usually carried forward, the chin approaching the sternum, the posterior portion of the scapula being raised and standing out; and in cases of long standing a compensatory lumbar lardosis occurs, the abdomen projecting, and the trunk being carried backward, so as to maintain the equilibrium.

*Juvenile* cyphosis is more common in girls than in boys, and is most frequent about the age of puberty, and is generally due to a general relaxation of the system and of the spinal muscles and ligaments, mainly caused by vicious attitudes in writing or in studying at school.

The *senile* cyphosis occurs later in life, and is usually induced by faulty positions assumed during business hours through life, or as a result of gout or rheumatism, and the deformity is usually marked and intractable.

The *treatment* of round shoulders may be considered under two heads, physical and mechanical.

*Physical treatment* involves the employment of such exercises and movements as will conduce to the proper strengthening of the deficient muscles, and also tend to diminish the deformity itself.

The first exercise to which your attention is called necessitates the use of a table. For this purpose employ either a table, or lounge, or couch, the surface of which is padded, or covered, so as to be comfortable to the patient, and it should be low, so as to divest the patient of all fears of falling while undergoing the exercise. The patient should place himself or

herself in the extension position,—i.e., the edge of the table should come to the central dorsal region, the patient lying upon the back, and the head and upper extremities should hang over into space.

When this position is assumed, it will be seen that the chest has a tendency to resume its normal shape, that it loses its contracted appearance, and that the shoulder-blades tend to approach each other. To approximate the shoulder-blades still further, the patient may clasp the hands together behind the back, and while undergoing this process it will appear that the skin and tissues of the anterior portion of the thorax are stretched as much as their structure allows, and that, posteriorly, the soft parts become relaxed.

Dumb-bells of various sizes are now taken in the hands, and a series of rapid lateral movements practised, which still further expand the chest. There are quite a number of calisthenic exercises which are of advantage if practised in this horizontal backward traction position, but they must be employed with care and moderation, as their expanding effects are so powerfully augmented by gravity that they may strain the tissues painfully and thus delay treatment.

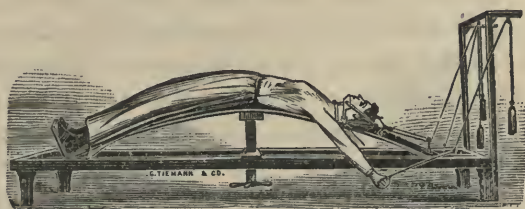
A most useful agent is also found in the rubber cord. Of these, there may be two fastened by hooks and staples to the floor in such a manner as to draw the hands beyond each other, the resistance of the muscles to the contractility of the rubber constituting a most valuable agent for the development of the chest, if formulated into a series of exercises.

This horizontal backward traction position should be practised daily at least twice, and from fifteen minutes to half an hour at a time, and it is very efficacious.

A second form of exercise is upon the horizontal curved traction-frame, which the author has recently devised. It consists (see Fig. 1) of a curved board, the curve of which can be regulated by means of a screw, and provided with traction apparatus at its upper extremity and foot-rests at its lower. It can readily be seen that when the patient lies upon this curved board and traction is exerted upon the spine, the deformity will tend to disappear entirely without fatigue to the patient; and that while in this position, if the arms be

systematically exercised by means of the pulley and weights attached to the frame, the deficient muscles can be exercised to the very best advantage, while the traction force is at the same time exerted upon the spine itself.

FIG. 1.



The third form of exercise is that of the vertical curved traction-frame, also devised by the writer. This resembles the frame just described, except that the apparatus is vertical instead of horizontal, as seen in Fig. 2.

It consists of a curved board, against which the back of the patient rests, and is also provided with traction apparatus and pulleys and weights.

On this frame, after the suspension is adjusted, two forms of exercise may be employed: first, the muscles of the upper extremities and chest will be strengthened by means of the pulleys and weights; and, second, the muscles of the lower part of the back are developed by means of a kicking exercise, the traction on the curved board being, of course, constant during both. The use of this frame is particularly serviceable in strengthening the muscles of the back and reducing the deformity.

FIG. 2.



There are also certain postures which may be recommended besides the regular exercises: the first, the prone instead of



the supine posture, the patient reclining upon the front of the body during the day, lying at full length and resting upon the elbows; the second is to have during sleep both bolster and pillow removed from the usual places under the head, and one or both placed under the shoulder-blades, thus bringing the head somewhat below the dorsal region and tending to curve the spine in the direction opposite to the position of the deformity; so that during sleep the posterior spinal muscles are prompted to recover some of the contractility lost during the day when the erect position is being maintained.

The *mechanical treatment* consists in the use of properly-devised apparatus for the restoration and retention of the normal curves of the back, and the mechanical problem thus presented is resolved into the reduction of the dorsal curve, since the cervical and lumbar are merely compensatory and tend to regulate themselves.

By the use of the table we have obtained great improvement in the condition of the deformity, and the question arises, How are we to retain this improvement when the vertical position is again assumed, as the posterior spinal muscles are impaired and have not sufficient power to hold the spine in its restored curves?

Although in slight or recent cases this can be accomplished by simple methods, yet a brace will afterwards be a necessity in severe cases, and it is easy for us to construct one upon the principles which govern the reduction of the deformity.

We must strive to keep the patient in a state of hyper-erection until the muscles have been exercised and invigorated sufficiently to render the use of a brace unnecessary, and a satisfactory method of utilizing the backward traction in the formation of a brace is one constructed on my adjustable "V" lever plan,—the fulcrum to be over the sacrum, the resistance to be greatest just below the central region of the dorsal curve, and distributed all along the spine below this region, and the power to be the forward tendencies of the upper extremities and head, so that while the body is maintained erectly no force is exerted upon the spine at any point; but the least tendency to rounding the shoulders brings a power to bear exactly opposed to the power of the deformity, which

increases automatically in proportion to the extent of the deformative force.

To construct a brace so as to bring the force to bear under these conditions we place a girth, provided with a sacral projection, about the hips (Fig. 3). From the upper edge of this

FIG. 3.

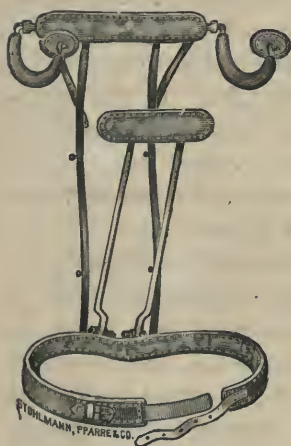
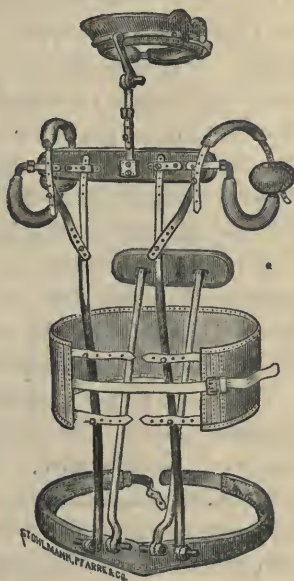


FIG. 4.



hip-girth springs a pair of padded strips, one on each side of the median line, so as to avoid the spinous processes, and these strips extend upwards to the middle dorsal region, terminating in a pressure-pad (Fig. 3).

So far the brace is a substitute for the table, but to give it efficacy we must supply a frame for backward traction as a substitute for the backward force exerted by the weight of the upper extremities when the body is in the traction position.

To effect this, a light steel frame moulded to the shape of the back, and extending from the sacrum to the cervical vertebrae, is attached at its low extremity to the hip-girth (as in Fig. 3), and there provided with ratchets, which admit of its being secured at any angle. The upper extremity of this frame is secured to the body by means of axillary crutches terminating

in pads over the acromion processes. In severe cases a removable head-piece may be added (as in Fig. 4).

The action of the brace is that of a lever exerting its force in such a manner as to distribute its pressure along the spine, the dorsal centre being the point of greatest pressure, and the sacrum the least, the intermediate pressure being so graduated as to decrease from the dorsal centre to the sacrum. We thus see that direct pressure is provided to the greatest degree where it is needed most,—*i.e.*, at the dorsal centre,—and in the least degree where it is needed the least,—over the sacrum; and there is thus no portion of the spine below the dorsal centre without direct support. This support and forward pressure is just in proportion to the backward angle of the brace-frame and the forward tendencies of the deformity. In the beginning of the treatment the brace-frame may be secured at a considerable angle, but as improvement ensues this may be lessened until it lies flat upon the strips and becomes in its action a mere spinal support instead of a lever.

This brace makes an extremely effective and comfortable instrument, and can be made to exercise any desired degree of power on the deformity. But there are many cases which do not require so pronounced an instrument as this, cases in which the youth and immaturity of the patient have not as yet allowed the parts to become habituated on the abnormal curves to such an extent as to demand its use.

Such cases require merely a light, strong, compound spring, or pair of springs, which will act supplementary to the impaired muscles of the back, and we can adapt this spring power to the form, so that it will not be apparent to an observer that the patient is wearing an aid of this kind.

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## Current Literature.

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### I.—HYGIENE AND THERAPEUTICS.

Jeffries: On the Sterilization of Milk and Foods for Infants. (*Am. Jour. Med. Sciences*, May, 1888.)

During last summer's work as district physician of the Boston Dispensary, the author's attention was called, by the severity and prevalence of the trouble, to the summer diarrhœas of infants. The cases presented a clinical picture familiar to all physicians. Treatment was begun with the ordinary drugs and salicylate of soda and care of the bottle. Later, the treatment was changed to creasote, if vomiting existed, and care of the milk-supply. The change was made to bring the treatment more in accord with the generally-accepted belief that bacteria are at the bottom of the trouble.

Investigation of the milk-supply showed that this was greatly at fault; though "fresh each day," it was, as a rule, found to be decidedly acid, often curdling if heated, by the time it was fed to the infant.

Remembering the custom of housewives to scald the milk, directions were given that all milk used for the infants should at once, on receipt, be steamed in a skillet set into the top of the tea-kettle. After this it was kept covered, and on ice if possible. The result was that, instead of staying at the point of death, the little patients began to pick up and were soon well, the stools first becoming light, then yellow.

The ordinary milk-supply of a large city is a day or more old, has a slightly acid reaction, and contains many growing bacteria. If kept for a day, it is decidedly acid in reaction, has a sour taste, is apt to curdle if heated, and contains a very large number of bacteria, the cause of the changes. Fresh milk sterilized, or collected sterile, and protected from organisms, undergoes no changes even after the lapse of indefinite periods, except the separation of the fats. If bacteria are present a great variety of changes may occur according to the species,—for instance, the milk-sugar may be turned into acids, the fats broken up, or tyrotoxicon formed. As milk affords such a fine medium for growth, all efforts to rid it of bacteria must be governed by the use of poisons—germicides—or some physical condition inimical to their life. The first method is not admissible in foods, while the other offers little chance of success except by heat. Cold simply retards their growth, does not kill. As boiling produces marked changes, this also is unde-

sirable, so our means are narrowed down to the ordinary one of steaming. Fortunately, this produces but slight changes in the milk compared to the boiling, and, as he has found, is efficient.

The writer presents a series of forty-nine experiments in the sterilization of milk, condensed milk, cream and milk mixture, and Mellin's food mixture.

The milk was steamed for from five to fifteen minutes, and afterwards agar-agar or Esmarch cultures made.

The experiments show that milk may be sterilized by steaming for fifteen minutes. The majority of specimens subjected to one steaming of fifteen minutes showed distinct signs of change within a month, while most of those steamed twice did not change at all.

The following directions are given for the sterilization of milk:

Stopper the flasks with cotton-wool, and heat them in an oven for thirty minutes, at a mild baking heat, or until the wool becomes brown. Pour the requisite quantity of food into the flask, and then place in the heated steamer for fifteen minutes.

Any cooking steamer with a perforated false bottom and a snug cover will do; or the lower part of a Chamberlin's steamer; the heat must be sufficient to keep the water in active ebullition.

The milk should be steamed when first received, and preferably in the flasks from which it is fed to the infants. This requires as many bottles as the infant is fed times during the day. If the milk is allowed to stand before steaming, the advantages of the method are done away with in great part. The milk may be sweet, but has already been acted upon by bacteria. In case a sufficient number of flasks cannot be afforded, the milk should be steamed in a few larger ones, kept stoppered with cotton-wool, and drawn from as needed.

**Marpmann: The Cause of Lactic Acid Fermentation.** (*Arch. f. Kinderh.* [abstracted], ix. 2.)

By means of lactic acid gelatin, in accordance with Koch's method, the author succeeded in cultivating from uncooked milk five different varieties of spores which did not diffuse through the gelatin, all of which changed milk and cane-sugar into lactic acid, and hence must be efficient in the ordinary process of acid fermentation in milk. All these spores were varieties of cocci and short rods, and it would have been well if the author had tried other media of cultivation in addition to the gelatin. Experiments in producing fermentation, with

the admission of air, showed that the spores were capable of producing one-half a gramme of lactic acid in eight days from one hundred cubic centimetres of milk. In the experiments in which air was excluded from the mixture of milk, sugar, and inorganic salts, the mixture became turbid, but there was no development of gas. No pathogenic result was obtained by inoculating and feeding mice with the mixture. No experiments were made upon other animals. The statement of the author that these spores are probably taken by the cows with their food or their water and then secreted in the milk, as well as the statement that the acid fermentation of milk is caused by different forms of spores, seems to show that the author is not entirely familiar with the older literature of this subject, and that he quite ignores the more recent investigations, notably those of Hüppe. As this subject only represents a portion of the author's extensive investigations on the subject of the spores which are found in milk, it is probable that in other parts of his work he has remedied the defects which have been pointed out in this.

A. F. C.

**Mays: Treatment of Chronic Bronchitis in Children.**  
(*Med. News*, March 17, 1888.)

Quite an extended experience in the treatment of these cases leads the writer to the conclusion that persistent counter-irritation is of the first consideration. He uses croton oil and sweet oil, one to two parts of the former to six of the latter, well rubbed into the skin of the chest. The internal treatment is directed towards a stimulation of the bronchial mucous membrane, and towards a recovery of the appetite. He thinks the former will be attained by the following combination:

R Ammon. murias,  $\mathfrak{z}\text{i}$ ;  
Ex. euphorbia pil. fld.,  
Tinct. digitalis,  $\text{aa}$   $\mathfrak{f}\mathfrak{z}\text{iii}$ ;  
Atropiæ sulph., gr.  $\mathfrak{x}\text{ss}$ ;  
Chloroformi, gtt. xii;  
Syr. Tolu,  
Syr. Picis liquid.,  $\text{aa}$  q.s.  $\mathfrak{f}\mathfrak{z}\text{i}$ ;  
Aquæ, ad. q.s.  $\mathfrak{f}\mathfrak{z}\text{iv}$ .

Sig.—Teaspoonful every three hours.

To aid digestion, and as a general tonic, the following will be found useful:

R Acid. phosph. dil.,  
Acid. nitro-muriatici dil.,  
Acid. sulph. arom.,  
Tinct. ferri chloridi,  $\text{aa}$   $\mathfrak{f}\mathfrak{z}\text{ss}$ . M.

Sig.—30 drops in sweetened water after each meal.



Sturgis: On the Use of Lanolin and Boracic Acid in Certain Diseases of the Skin in Children. (*Bost. Med. and Surg. Jour.*, February 23, 1888.)

The author has been much pleased with the use of lanolin. The cases in which he has found it of most value are: facial eczema and eczema of the head, eczema squamosum, eczema rubrum and intertrigo, the mild form of seborrhœa often seen on the temples and about the chin, and, lastly, chronic urticaria.

In eczema of the face and head he directs that the parts be cleaned of crust in the usual way. Should the exposed surface be weeping copiously, he prescribes boracic acid in very fine powder to be dusted on for first forty-eight hours, and not to be washed off.

The first effect of this is to increase the serous flow, but afterwards to diminish it. After forty-eight hours the boracic acid is to be applied twice daily, washing off each time the acid applied the time before.

As soon as the skin is in condition to bear an ointment, he uses boracic acid,  $\mathfrak{z}$ ii; lanolin,  $\mathfrak{z}$ i.

In eczema squamosum, in which there is considerable induration with scaly surface, he uses five to fifteen grains salicylic acid to the ounce of lanolin, according to degree of induration, rubbing it briskly into the skin.

In chronic urticaria he thinks we have in lanolin a reliable application to alleviate the itching, usually so difficult to control.

In eczema rubrum and intertrigo he employs finely-powdered boracic acid, dusted over the parts night and morning, and, when about the genitals, whenever the napkins are changed.

Osborne: Salol in Diarrhœa. (*N. Y. Med. Jour.*, April 7, 1888.)

The author has used salol in twenty-two cases of diarrhœa, most of them children, with nineteen reported cures; three not heard from.

To a child of any age up to two years he gives .050 gramme; from two to five years, .100 gramme; five years to twelve years, .200 gramme; and to all above twelve years he has found .300 gramme a sufficient dose. He has found it necessary for immediate success in every case of acute diarrhœa to repeat the dose every two hours until the stools cease.

Randall: Salicylate of Soda in Polyuria. (*Med. News*, April 7, 1888.)

The writer reports the case of a child eleven years old afflicted with polyuria. She voided nine and a half pints of

urine in the twenty-four hours. Thirst was insatiable. The urine contained no sugar. Valerian, ergot, and tannic acid were tried without success. She was then given eight grains of salicylate of soda in an aqueous solution after each meal. In ten days there was an appreciable amendment. The amount of urine diminished slowly but steadily. Four months later the discharge was only two and a half pints.

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## II.—MEDICINE.

Wolberg: Recurrent Fever and Typhus Exanthematicus in Children. (*Rev. Mens. des Mal. de l'Enf.*, January, 1888.)

In the course of four years the author treated in a children's hospital forty-seven cases of recurrent fever. The disease was most prevalent during the months of June, April, and August. Sex had no apparent influence upon the frequency or the gravity of the disease. It occurred most frequently in children under six years of age. There seemed to be no true period of incubation; the fever came on when the children were apparently in health, beginning with a violent chill, headache, abdominal and muscular pains, especially in the muscles of the lower extremities. In many cases vomiting was the first symptom, the tongue being coated, constipation being present, and also severe pain in the ileo-cæcal region. The second attack of the disease was frequently associated with catarrhal angina, with exudate upon the tonsils. In twelve patients the attacks were accompanied by delirium, especially during the night. During the day the children were apathetic but not delirious. The spleen was enlarged in all cases; in only five was there enlargement of the liver. Spirilla were found in the blood of all the patients, but not in the urine, the saliva, or the sweat. The highest temperature was 41.6° C. Usually defervescence took place abruptly, and was accompanied by profuse perspiration. There was also free epistaxis in several cases. The average duration of the first attack was four to ten days, and during the remission, which lasted from four to eleven days, the patients seemed quite well. There was no apparent relation between the duration of the attack and that of the remission, and in fourteen of the cases there was no second attack. The second attack was like the first, excepting that it was of shorter duration. In fifteen of the cases there was a third attack, the second remission averaging seven days. The symptoms in the third attack were milder than in the first. There were no complications and no fatal cases. The

treatment was purely symptomatic. Quinine and salicylate of soda were given but produced no effect.

Between the years 1878 and 1885 the author also treated in the same hospital with the recurrent fever patients fifty cases of typhus exanthematicus. The largest number of cases was seen during the spring and summer; none at all were seen during the winter. Of the fifty patients twenty-two were boys and twenty-eight girls; the morbid process was also more intense and of longer duration in the girls than in the boys, the average duration with the former being fourteen and one-half days, and with the latter twelve days. The largest number of cases occurred between the ages of six and twelve years, but the younger the patient the more benign, as a rule, was the course of the disease. The duration of the period of incubation averaged eleven days. The disease was plainly contagious, and in six instances the author saw two or even three members of the same family attacked by it simultaneously, but he saw only one case of direct contagion. The disease usually began with intense headache, febrile phenomena, and lassitude. Chills and vomiting rarely occurred at the outset. Delirium did not appear until the fifth to the seventh day, and at the beginning it was entirely nocturnal and subordinate to the fever. Towards the close of the disease the fever was continuous in many cases, while the temperature was low and there were hallucinations. The eruption appeared first upon the chest, and during the following day extended over the entire body. It usually appeared on the fifth day of the disease, and after continuing twenty-four hours began to disappear, all traces of it being absent by the tenth day. In the severe cases the eruption, instead of being a simple roseola, was accompanied by petechiæ and ecchymoses. In the first stage of the disease the headache and fever were accompanied by intense abdominal pain in the region of the cæcum and the umbilicus. Constipation and meteorism were always present and were succeeded by diarrhœa. The tongue was coated, there was intense thirst, and no appetite. There was intense pain in the adductor muscles of the thigh and the muscles of the calf, sometimes in those of the back, and in the nucha, and rarely in the superior extremities and in the joints. In all the cases the lungs were affected, the customary complication being generalized bronchitis, which disappeared as soon as convalescence began. The spleen was more or less enlarged in all cases, but never the seat of pain. The liver was normal in every case. Hemorrhages occurred infrequently in the form of epistaxis, cutaneous ecchymoses, and bloody stools. Desquamation of the epidermis resembling that of measles was



sometimes present, and in several cases there was profuse sweating. The temperature reached 40.2° C. on the first day of the disease, and it did not vary much during the entire period of development. Defervescence took place slowly and progressively until the normal was reached. The pulse was full and rapid at the beginning, and subsequently it became slow and soft. In three cases there was a purulent discharge from the ear after the disease had been recovered from. There were three deaths, from scorbutic dyscrasia, noma, and general collapse, and this low rate of mortality establishes a benign prognosis for typhoid fever in children, as a rule. The treatment was entirely symptomatic.

A. F. C.

Steffen: Acute Myocarditis. (*Jahrb. f. K.*, xxvii. 3.)

This form of heart-disease is a rare one, whether in adults or in children. It has been observed by the author in children in two forms, one of which involved limited areas and the other was diffuse. The first form was seen in connection with typhoid fever, coming on suddenly with pain in the cardiac region, loss of strength, dyspnoea, and cynosis. The pulse was rapid and often arrhythmical. These symptoms lasted from four to eight days, but the patients remained very weak for a long time, and suffered severe pain in the region of the heart if active movements were made. Nothing definite could be determined from physical examination, and the diagnosis of limited disease of the myocardium was made from the symptoms before mentioned. Diffuse myocarditis was also seen in the course of infectious disease, especially diphtheria. In the latter disease myocarditis is one of the conditions which accompanies general infection. It is announced either by an apathy which suddenly takes possession of the child or by great restlessness. The pulse becomes frequent and so weak that it can hardly be felt. The respiration is quickened, but the temperature is not often affected. Physical examination shows dilatation of the entire heart, the apex-beat being below the normal situation and outside the left mammillary line. The heart-sounds are distinct, but weak. As the disease progresses, and the force of the heart's action diminishes, the quantity of urine excreted is diminished. The prognosis of the disease becomes worse from the fact that children with it are apt to refuse food. An improvement may take place, however, in connection with improved symptoms pertaining to the diphtheria. In that case the albuminuria is less pronounced, the heart contracts to its normal boundaries, and its action becomes more forcible. If a fatal result occurs it usually takes place suddenly. Not infrequently during the last days of life there is extensive

transudation into the subcutaneous cellular tissue, which depends partly upon the heart-weakness and partly upon the disintegration of the blood.

Microscopic examination of the myocardium shows granular cloudiness of the muscle fibrillæ, and sometimes fatty degeneration, but these appearances are not always present if the disease has had a very rapid course.

In those cases in which a fatal result takes place notwithstanding great improvement in the diphtheritic symptoms, and in the general condition as well, it will be found that the heart still gives evidence of dilatation and weak action, and death from heart-paralysis comes suddenly and perhaps unexpectedly. Only when the heart-action increases in force and the pulse becomes stronger and less frequent can one cease to fear sudden death for these cases. The diagnosis of this disease will be doubtful if it is complicated with pericarditis or endocarditis. As the heart dilates in myocarditis there will be a development of symptoms of suffocation, and the acute symptoms at the beginning will distinguish this dilatation from that which takes place more gradually in consequence of stasis of the circulation. It is also to be differentiated from the dilatation which accompanies such infectious diseases as typhoid fever and scarlatina with nephritis, the myocardium in the latter being without disease, but being weak and affected as to its nutrition. In dilatation from the latter diseases, also, the occurrence is more acute than in myocarditis, dilatation to a very considerable size taking place within a few days, and being followed by death within a very short time, or by a return to normal limits within an equally brief period. A diagnosis between dilatation as a complication of diphtheria and myocarditis antecedent to diphtheria cannot be made during life by physical examination. The differentiation between acute myocarditis and acute endocarditis is important. With the latter dilatation takes place more rapidly than with the former on account of the rapid weakening of the muscular structure of the heart, and it disappears yet more rapidly with the disappearance of the endocarditis. Should both the dilatation and the endocarditis become chronic, hypertrophy would result. Differentiation of myocarditis from valvular disease can be made without difficulty. The most important factor in differentiating between endocarditis and myocarditis is the general phenomena. The sudden loss of strength, the anxious expression, the small, arrhythmical, and very rapid pulse are not found in endocarditis, neither is there any local pain. A restoration of heart-force is also more decided, and more speedy in the latter than in the former. Myocarditis is occasionally associated with

endocarditis and pericarditis, but the extent of the disease can seldom be ascertained during life.

A. F. C.

Kast: *The Pathological Anatomy of Cerebral Paralysis in Children.* (*Rev. Mens. des Mal. de l'Enf.* [abstracted], January, 1888.)

Two cases of this disease were observed by the author, the first being in a child fourteen months old, the second in one of three years. In the first the child was apparently well when he was suddenly seized, at the age of six months, with convulsions upon the right side of the body, with subsequent paresis of the right arm and leg. Five months later there were clonic convulsions lasting several days, and subsequent spastic hemiplegia of the right side, with retention of the urine. Gradual failure of the functions of the intellect followed, and convulsions every three or four weeks. At the age of fourteen months the child died in a convulsion. The autopsy showed diffuse chronic encephalitis of both gray and white substance in the anterior two-thirds of each hemisphere. In the second case paresis of the extremities of the right side occurred when the child was nine weeks old, following intense convulsions, which had persisted twelve days, and which at first were general, and then were limited to the right side. The intellect was unimpaired. The child died at the age of three years, apparently from measles, but the autopsy showed uniform atrophy of the left cerebral hemisphere, with no appreciable evidences of inflammation. While the symptomatology of these two cases was nearly identical, the lesions which were found at the autopsies were quite different. The facts in question led the author to conclude that it is not proper to attribute paralysis to acute polyencephalitis, for in the majority of cases both white and gray matter participate in the morbid process, and in the present state of science it is impossible to determine with precision the primary seat of the disease.

A. F. C.

Comby: *Rachitis and Syphilis.* (*Rev. Mens. des Mal. de l'Enf.*, January, 1888.)

The author concludes his elaborate paper upon this subject in the following manner:

1. The question of the relations of syphilis and rachitis in early childhood was discussed by Parrot at the London Congress in 1881 in a way which was opposed to the views which are generally held by physicians upon that subject. The author is unable to understand how Parrot could have adopted the obsolete proposition that there is no other origin for rachitis but hereditary syphilis.



2. The arguments for such a position are borrowed exclusively from pathological anatomy. Bearing in mind the well-known signs of active syphilis, Parrot sees in lingual desquamation, cicatrices upon the buttocks, erosion of the teeth, and natiform cranium the marks of an extinguished syphilis. Hereditary syphilis attested by these marks would engender dense osteophytes, gelatiniform atrophy, and spongoid tissue, which suggest rachitis.

3. This theory of Parrot can be easily refuted:

(1) Pathological anatomy teaches us that rachitic lesions differ from syphilitic; rarefaction of tissue characterizes rachitis, condensation and softening are peculiar to syphilis.

(2) Clinical observation shows us that the two diseases are unlike and even opposites; the cicatrices upon the buttocks and the dental lesions which are common in syphilis are rare in rachitis; the corneal lesions are almost always of scrofulous origin; the lingual desquamation is not at all peculiar to syphilis.

(3) The traditional treatment for rachitis is not only not beneficial, but is harmful for syphilis, and this is a protest to the theory of Parrot.

(4) The etiology completes the ruin of Parrot's theory; rachitis is practically absent from several of the countries which are ravaged by syphilis; the poor pay a heavier tribute to rachitis than the rich, although both classes are equally in bondage to syphilis; the causes of rachitis reside almost entirely in the faulty alimentation of the newly-born, such causes being artificial nourishment, the use of indigestible food, premature weaning, etc.

4. The relations of syphilis and rachitis may be considered as follows:

(1) Rachitis is of frequent occurrence in children who suffer from hereditary syphilis, but it does not follow from that fact that it is of the nature of syphilis. It is owing to exhaustion and cachexia that hereditary syphilis is related to rachitis, not to any specific influence. To prevent this cachexia, or to combat it with mercury and the diet which is suitable for infants, constitutes the prophylaxis of rachitis. An infant who is nourished artificially is dedicated, as it were, to rachitis.

(2) With regard to acquired syphilis, it is equally without specific effect in producing rachitis. If infants who have been contaminated are provided, in season, with suitable food, they will escape rachitis more certainly than in the case of hereditary syphilis. If they are deprived of this they will become rachitic.

In all cases, therefore, syphilis acts only as an occasional and adjuvant cause. In the etiology of rachitis it holds the same position as measles, variola, scarlatina, typhoid fever, and broncho-pneumonia.

A. F. C.

Bohn: *Atrophia Infantum.* (*Jahrb. f. K.*, xxvii. 3.)

The author sketches the development of the idea involved in atrophy from the simple definition of Celsus to the elaborate treatise of Parrot. None of the intermediate writers have failed to look upon atrophy as having a general and symptomatic significance, and no one has distinguished any form of it which is peculiar to childhood until it was so distinguished by Hufeland and Kortum at the end of the last century. These authors considered atrophy or tuberculosis of the mesenteric glands as the anatomical foundation of atrophy in children, the local condition being the result of general scrofula. In France and England atrophy was recognized as having the same anatomical characteristics as were defined by German writers. Schönlein, on the other hand, affirmed that the sole cause of atrophy was imperfect nutrition, and that this condition was entirely different from that which resulted from mesenteric disease. At a later period Canstatt defined four varieties of atrophy: (1) *Paidatrophy* from congenital weakness; (2) in consequence of bad nourishment and hygiene; (3) *dyserasic atrophy* from scrofula, congenital syphilis, and rachitis; (4) atrophy resulting from worms, dentition, and exhausting diarrhoea. Bednar taught that disease of almost all the organs and systems, as well as congenital weakness and depraved nutrition, may give rise to atrophy during the first years of life. This absence of distinctness in the definition of a term which signifies so much that is of importance is regrettable, and the author proposes to follow the lead of Hensch in defining *atrophia infantum* as an independent condition of the system, thus restoring the status which was established by Schönlein. He therefore defines pure atrophy as the result of continuously insufficient nutrition of the child's body, of continuous deficiency in the means of reparation to supply that which has been used up, and deficiency in fresh material for tissue formation. It differs from *dystrophy*, or faulty nutrition in which certain elements are in excess, as in rachitis, and may be considered as a general disease of unusual simplicity. It is also more comprehensive than *anæmia*, with which it has some points of resemblance. It can exist in its simplicity only in the earliest period of life, and most of the cases occur during the first four months in consequence of congenital weakness of constitution and congenital deformities;

poor or insufficient nutriment, deficiency in the supply of heat, light, air, and want of cleanliness. To the symptoms and clinical picture as given by Schönlein and Henoch a few additions are made by the author.

(1) Intestinal catarrh, while not a constant symptom, as maintained by Parrot, is a complication which occurs more or less frequently as the result of external conditions.

(2) In atrophic children there is never œdema of the skin nor transudation into the cavities of the body. The poverty of the solid tissues and organs of the body is shared by the blood, and no hydræmic condition is developed.

(3) The cranial bones of atrophic children, during the first year of life, are always hard, in marked contrast to the cranio-tabes of rachitic children of the same period of life.

The weight of atrophic children may not be more than half as great as it was before the atrophic process began, the loss being principally in fat, and to a lesser degree in the albuminous and gelatinous elements. Hence the skin suffers the greatest loss, then the muscles, then the bones and viscera. Autopsies show atelectases in the lungs, thromboses in the veins, catarrhal and follicular inflammations of the intestines, and occasional evidences of bronchitis and pneumonia. The proposition that general atrophy is due to atrophy of the intestinal mucous membrane is not accepted after a review of the evidence, and the conclusion is that no organic disease is at present known which can produce that condition.

A. F. C.

**Babes: The Pathogenic Bacteria of Childhood.** (*Arch. f. Kinderh.* [abstracted], ix. 2.)

The author's paper is based upon systematic investigations upon the cadaver, which demonstrated that in most of the diseases which have a fatal termination there are pathogenic bacteria which act as etiological factors, and are capable of producing wound infection. He found in every case of scarlatinal inflammation of the kidneys a streptococcus, morphologically similar to the coccus of erysipelas, in the kidneys, and always susceptible of cultivation. These cocci were also found in the spleen, lymphatic glands, and most of the other organs. Other bacteria were also found in the diseased tissues, especially a saprogenic bacillus. If the cocci were injected subcutaneously an œdematous swelling of the part resulted, and the animals inoculated died in most cases of sepsis. In some cases the inoculation was followed by an erythema of the skin, lasting two or three days, and resembling the eruption of scarlatina. It was, therefore, believed that scarlatina was developed from



these cocci. He also found in the bronchiectasis resulting from scarlatina, in gangrenous pulmonary tissue, and also in other organs, a pathogenic coccus resembling the chain-coccus, which developed a brown superficial growth upon gelatin and agar-agar. Mice and puppies inoculated with it died with symptoms of sepsis. In a case of kerato-malacia he found a bacillus which was slightly stained with aniline colors, from which pure cultures were developed upon gelatin. If injected subcutaneously in mice and puppies it resulted in inflammatory œdema and death. In a case of ulcerative inflammation of the skin following prurigo he found in all the internal organs and in the skin, in addition to the streptococcus, a short-rod bacillus, which became strongly stained at its ends, and developed in cultures after the manner of the staphylococcus. When animals were inoculated with it no reaction followed. In a case of dysentery, a crooked saprogenic bacillus was found in the tubular glands and mucous membranes, and also in the internal organs. It rapidly developed on agar-agar at 37° C., and quickly diffused through gelatin. Mice quickly succumbed after inoculation with it, but puppies showed only hemorrhagic inflammation of the intestine.

A. F. C.

Menger: Hemorrhage of the Mouth in a Child aged Nine Days, affected with Stomatitis Parasitica. (*Daniels's Texas Med. Jour.*, August, 1887.)

The writer records a case of fatal hemorrhage from the mouth in a child nine days old. At the autopsy numerous ecchymoses and petechiæ were seen on the body. The mucous lining of the mouth was covered in different places with a mass of granular, curdy substance, of brownish color, protruding more or less, and firmly adherent to the mucous membrane. The tongue was covered with a thick, red-brown, and bloody substance, of spongy appearance, covering nearly the entire surface of the organ. The œsophagus showed numerous nodulated protuberances, caused from deposits of the *oidium albicans*; otherwise the œsophagus and pharynx were normal. The internal organs were congested.

Microscopical examination of the covering of the tongue showed a red-brown body, consisting mainly of epithelial elements, impregnated with blood-corpuscles and a whitish body of granulated amorphous appearance, consisting chiefly of elastic tissue, epithelium, and large quantities of the *oidium albicans*.

The author thinks this was a case of hæmatophilia. The mother stated that she had rubbed the child's tongue with a cloth saturated in salvia tea, in order to remove the thrush, after which a bleeding was noticed.

White: A Case of Icterus Infantum from Congenital Deficiency of the Ductus Communis Choledochus. (*Am. Jour. Obstet.*, January, 1888.)

Case seen in consultation with Dr. Moffat; child born June 9, 1887; second child; labor normal and of short duration. Everything progressed satisfactorily until sixth day. Cord separated on fifth day, leaving a clean and healthy surface. On the 7th day (June 16) the infant refused the breast and became irritable. Soon it had a slight convulsion, which recurred at intervals of a few hours.

June 17. Doctor summoned, and found child in a tetanic condition, which lasted about twenty seconds; abdomen tense, tumefied, and tympanitic. An enema caused expulsion of considerable flatus, and apparently afforded some relief.

June 18. Patient worse; temperature,  $100.6^{\circ}$ ; pulse, 120 to 140; and respirations accelerated and shallow; jaundice pronounced; frequent recurrence of convulsions.

June 19. Temperature,  $101^{\circ}$ ; pulse, 130 to 140; jaundice very pronounced; abdomen expanded, tympanitic, and tender; liver found to be greatly enlarged and sensitive to manipulation. In evening, temperature,  $103^{\circ}$ ; pulse, 140; frequent convulsions; child died of exhaustion on June 21.

At the autopsy the intestines were found coated with recent lymph, and in some places adherent; liver greatly enlarged and engorged; and gall-bladder filled with blackish bile of syrupy consistence; the hepatic ducts normal, but there was an evident constriction of the cystic duct, and the common duct was impervious throughout its length. In place of this duct there existed a fibrous cord-like band, extending to the duodenum; left lung completely collapsed; right lung found in natural state, fully expanded.

The writer mentions a number of cases taken from the literature of the subject.

Holt: Cerebral Symptoms in the Pneumonia of Children. (*Med. Rec.*, April 7, 1888.)

From an analysis of one hundred and seventy-three cases, the writer draws the following conclusions:

1. Cerebral symptoms in the pneumonia of children are very common.

2. Convulsions belong almost without exception to infancy, being rarely met with after two years. Occurring at the onset, they belong essentially to lobar pneumonia; they do not indicate a bad prognosis, nor even, in most cases, a severe attack. When late convulsions come on, death within twenty-four hours may confidently be predicted.

3. Delirium comes oftenest between the ages of five and eight, usually in conjunction with extensive disease and high temperature. These cases, although severe, with but few exceptions recover.

4. There is no such intimate association between cerebral symptoms and apex disease as has been frequently stated. Such symptoms occur in only about one-fifth of the apex cases.

5. Nervous symptoms occur much more frequently (one-third of the cases) when the disease is extensive and the temperature very high.

In hyperpyrexia he regards the cold pack as safe, and the most efficient means to reduce the temperature, and thus abate the brain-symptoms dependent upon it.

To allay restlessness, quiet delirium and cough, and promote sleep, he uses antipyrin in doses of two or three grains in an infant of from six to nine months, and double the dose at eighteen months or two years. The dose may be repeated every six or eight hours.

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### III.—SURGERY.

Caillé: Prolapse of the Inverted Lower Portion of the Right Ureter through the Urethra in a Child Two Weeks Old. (*Am. Jour. Med. Sciences*, May, 1888.)

Female, two weeks old. Diarrhœa since birth; on an average eight to ten evacuations daily. The passage of urine was not accompanied by any symptoms to attract attention. On November 6, 1886, the infant appeared restless and refused the breast. Towards evening a severe, prolonged fit of crying left it exhausted and pale in its mother's lap. The next inspection of the child's genitals for diapering revealed the presence of a tumor or swelling protruding from the vulva, and in this condition it was presented at the dispensary the following day.

Examination showed the tumor located midway between the symphysis pubis and the introitus vaginae, and could be pressed well into the vagina, thus disappearing from sight, but remaining perfectly distinct to the touch, and irreducible by pressure, the possibility of a diagnosis of prolapse of the anterior wall of the vagina being thereby excluded. The urethral orifice was not in view, while its site was occupied by an annular tumefaction, from the centre of which the pedicle of the tumor seemed to take its origin. A close inspection of the tumor revealed a lateral opening in its right side, which admitted the passage of a probe.



Under chloroform the prolapsed part was, without much difficulty, reduced by means of a curved silver catheter, whereupon the enormously-dilated urethral orifice came into view. The bladder was washed out with a solution of potassium permanganate, and the vagina packed with iodoform gauze to prevent a possible relapse.

November 8. Child's diarrhœa continues; urine reported to be clear; some symptoms of peritonitis present.

Inspection revealed the prolapsed part again protruding in its original form, its surface being darker, and spotted with a grayish exudation. Under chloroform the part was reduced a second time, and the vagina again packed.

November 9. One thin evacuation; no recurrence of the prolapse; urine clear, and passed at regular intervals.

November 10. Two normal evacuations; passed cloudy and bad-smelling urine; prolapse again visible, and appeared discolored. With the aid of chloroform the tampon was removed, the vagina and bladder irrigated, and a fresh tampon introduced.

November 11. Diarrhœa again present; urine not offensive, and general condition satisfactory; no prolapse visible.

November 12. Diarrhœa; prolapse not visible; irrigation and renewal of tampons.

November 13. Recurrence of prolapse. Another careful examination led to the conclusion that it was not a vesical prolapse *in toto*, but presumably a prolapse of a part or diverticulum of the bladder, for the following reasons:

(1) Careful manipulation resulted in the passage of a catheter between the tumor and the annular tumefaction surrounding its base (representing the urethral orifice) into the bladder beyond.

(2) It was also observed that straining efforts on part of the child forced urine through the same passage from within outward.

(3) Rotation and forward movement of probe around the pedicle of the tumor enabled us to locate a right lateral insertion into the base of bladder.

November 14. Surface of sac showed a slough in the immediate neighborhood of the opening through which the probe was able to pass. Furthermore, the opening revealed the existence of a small hard tumor, about the size of a pea, within the cavity of the prolapsed sac. The nature of this tumor not determined. Believing the prolapsed part to be a diverticulum, and having found it to be irreducible, it was agreed to remove it.

Two days previous to the operation, the opening in the pro-

lapsed sac was noticed to afford exit to a purulent, offensive discharge. A flow of urine was never seen to take place from the prolapsed part.

The sac was cut away on the twelfth day after presentation. The child died in twelve hours.

The autopsy showed both ureters dilated. The right ureter was double, with a double insertion into the hilus, both branches converging in their downward course and terminating by a single opening in the bladder. Bladder empty. No evidence of hemorrhage. The point of insertion of the amputated sac was plainly visible, and corresponded to the site of the opening of the right ureter in the normal state.

The prolapsed sac, which had been removed by operation, was continuous with the mucous lining of the right ureter, and was, in fact, a prolapse of the inverted lower third of the right ureter into the bladder and through the urethra.

Right kidney the seat of cystic degeneration. Section of left kidney showed no abscesses. Both kidneys presented evidence of interstitial nephritis.

From a review of this unique case it would appear that, owing to the formation of a warty or papillomatous small growth in the right ureter near its vesical insertion, a partial or complete occlusion of the ureter took place, in consequence of which the small tumor was passed into the bladder and finally through the urethra, carrying with it or dragging along the inverted lower third of the ureter which presented in the form of a sac.

Jones: The Treatment of Congenital Club-Foot by Open Incision and Immediate Rectification. (*Med. News.*, January 21, 1888.)

This treatment depends upon the principle of putting the foot in as good a position as it can be made to assume, using necessary operative procedures, and fixing it by means of plaster bandages until it becomes accustomed to its new position. At the end of six weeks the plaster is removed, the foot again rectified, and the bandages reapplied for another six weeks, and so on until all tendency to relapse is overcome. The plaster acts as a fixation-splint, not as a correcting force. Certain cases of club-foot can be corrected simply by manipulation and fixation, and others require the aid of the knife. The author recommends careful manipulation under chloroform in all cases to overcome resistance and eliminate bands and adhesions; if this is well done, in about ten minutes the tissues relax and the foot lies limp and flaccid without any tendency to return to its old deformity, and now, from the

general rigidity of the foot, can be determined the extent of cutting that is needed. The method of operation is as follows:

Strict antisepsis, render foot bloodless by an Esmarch bandage, subcutaneous division of tendo-achillis, and thoroughly flex the foot; then make an incision from the centre of a line drawn from internal malleolus to the tuberosity of the scaphoid downward, and slightly backward, across the inner side of the foot, following the direction of the transverse wrinkle for a distance of an inch and a half, drawing the nerve and artery one side, and dividing the contracted structures as they present; then pass a tenotome beneath the skin and divide the plantar fascia and the muscular structure of the flexor brevis digitorum; cut these structures by a series of nicks instead of a prolonged incision. After allowing the wound to fill with coagulated blood, dress antiseptically, and apply a plaster bandage, which is to remain for four weeks, when the wound should be healed.

After-treatment consists in wearing a water-glass shoe for six to twelve weeks after the wound is healed. In applying Housmann's water-glass shoe, the toes are padded, a woollen stocking applied, a strip of tin placed on dorsum of foot to protect it when cutting the shoe off, a pasteboard sole fitted, and another stocking applied, then a plaster bandage one and a half inches wide is so applied as to form a shoe to the ankle-joint; while moist this is cut down and sprung off, it is dried in an oven, and covered with leather, so as to be laced. This shoe to be worn continuously.

The author claims for this operation the best results, with the least expenditure of time and trouble on the part of the surgeon, and the least discomfort to the patient.

**Pearce Gould: Thoracoplasty (Estlander's Operation) for Old Cases of Empyema.** (*Lancet*, February 11, 1888.)

Four cases are reported in detail, three of them being in children from nine to twelve years old. All were of very long standing; two were cured completely; one was greatly improved, but had still a small discharging sinus. The fourth case, an adult, died.

Thoracoplasty, the writer says, must be clearly distinguished from the much simpler operation of removing a piece of a rib for the purpose of drainage. It is a plastic operation to accomplish what nature has been unable to do,—i.e., allow an abscess sac to close. After the compressed lung has expanded to the utmost extent possible, when the mediastinum has been displaced, the diaphragm risen, and the chest-wall fallen in until the ribs are in contact, a cavity still remains. Such do



not easily fill up by granulations, and the patients waste and die of exhaustion, or some complicating disorder. For such cases no other operation will succeed. The surgeon should never be tempted into performing it to *save time*, as it is only justifiable to *save life*. Great stress is laid upon thorough exploration, and the necessity of removing *all* the bone in the outer wall of the abscess cavity.

**Cheadle: Intussusception Treated by Inflation of Air. Recovery.** (*Lancet*, February 18, 1888.)

At six A.M. the child, an infant of fifteen months, was noticed to be in great pain: from that time until three P.M. there were passages of blood almost hourly, with severe straining. Examination showed a tumor in the rectum, of "unmistakable shape." A tumor was felt externally in the position of the sigmoid flexure.

Sixteen hours after the first symptoms were seen the child was chloroformed, and the rectum gradually distended with air by a Higginson's syringe. The tumor could be felt, externally, to move up the colon as far as the hepatic flexure, but further than this it was not distinguishable. Manipulation was kept up during the inflation. The whole abdomen being now tympanitic, the air was allowed to escape; Tr. opii,  $\mathfrak{r}\mathfrak{i}$ , was given every four hours. This was discontinued after thirty-six hours, no further symptoms existing. On the third day there was a normal fecal movement.

The writer states that the ease of reduction was undoubtedly due to the early diagnosis, the importance of which he very justly emphasizes. This is the third successive case treated in the same manner with equally gratifying results.

**Carpenter: Intussusception. Cure by Injection on the Fourth Day.** (*Lancet*, February 25, 1888.)

An infant eight months old had, at noon, on December 9, a convulsion, the following night five or six passages of blood and mucus, and vomiting, which the next day had a fecal odor. December 11, a somewhat doubtful tumor was found along the descending colon, but nothing could be felt per rectum.

The following day a rectal examination revealed a projecting body like the os uteri, and the diagnosis was at once decided. The vomiting had meanwhile continued. Chloroform was given, and two pints of a warm boracic acid solution (five grains to the ounce) were injected. Reduction was quite easily effected. It was a little doubtful whether this had been complete, as the cæcum and ascending colon did not appear to fill with the fluid. The next morning the bowels moved freely, however, and put all further doubts at rest.

The singular feature of the case was that fecal movements continued during the whole course of the attack; after one passage the tumor was much reduced in size, so that the greater part of its bulk was evidently fecal.

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THE INTESTINAL DISEASES OF INFANCY AND CHILDHOOD. PHYSIOLOGY, HYGIENE, PATHOLOGY, AND THERAPEUTICS. By A. JACOBI, M.D., President of the New York Academy of Medicine; Clinical Professor of Diseases of Children in the College of Physicians and Surgeons, New York, etc. Detroit, Mich.: George S. Davis. 1887.

Before us there is a small volume of some three hundred pages, which will be hailed with pleasure by every physician who sees sick children. English literature is weak, especially on the subjects that have been chosen by the author; and, even if this were not the case, the standing of Jacobi as author and teacher is sufficient to give importance to anything he publishes. As might be expected, every chapter is sifted by experience, and although instances can be found in which theoretical reasoning may be said to have carried the author a little too far, the book is practical, *par excellence*. In the language of reviewers, "it ought to be found in every medical library." Throughout the book is written in strong style, and in no place can there be any doubt of the author's views or intentions. Whenever two or more views are entertained upon a subject, as a rule, Jacobi is found to be positive either in the acceptance or rejection of one or all of them. But he gives satisfactory reasons why he is to be found upon the side he chooses; and when he rejects the theories held by others he has one of his own, fortified by his vast knowledge of literature and by his great power of observation. Hebra was in the habit of relating an anecdote in connection with the ease with which some people will accept views and formulate theories. It was at a time when parasites and lower forms of life were not accepted with as little hesitation as they now are. Bazin, of Paris, had described a form of sycosis which he called "parasitaire," and Hebra, in all the great number of cases of sycosis which came under his care annually, could detect neither any peculiar form nor a parasite. So he made up his mind to visit M. Bazin in order to observe the disease as described by the French author. Upon seeing the cases, he came to the

positive conclusion that the "sycosis parasitaire" of Bazin was the same ordinary form which he had always seen. Thereupon he asked Bazin for the proof of his statement that the disease is either a different form or parasitic in its nature. The only answer he received, accompanied by a shrug of the shoulders, was, "Pour moi, c'est une sycosis parasitaire" (For me, this is a parasitic sycosis). Whatever may be said about Jacobi's views, and they may be very irritating as being diagonally opposed to your own, they can never be classed with the "pour moi" arguments. Furthermore, we find the author very positive as opposed to a great many of those vague etiological factors which still possess fascination for the people, and, unfortunately, for a great many physicians. In the introduction to the book we find the second summer idea placed upon its proper level; teething is handled without gloves. It is hardly necessary to quote, for the book will certainly be read by all interested in children's diseases. In connection with teething, Jacobi again calls attention to the concomitance of idioey and epilepsy, and the appearance of the upper incisors before the lower ones. It would certainly be interesting and valuable to have this point either verified or disproved by statistics. In regard to worms he says, "All of them (the symptoms produced by) can be referred to other diseases; thus it was that worms were once (still?), next to colds and dentition, the great etiological bugbears." Then follows a statement which every physician ought to bear in mind, but which, unfortunately, is most commonly overlooked, that either the worm or their eggs must be found before a diagnosis of helminthiasis is made. If pediatrics, as such, is to have a future, it must be in the direction of clearing up etiology, not only physiology, pathology, and therapy; and, after all, it is the sins of our medical forefathers we are suffering from. However, this is no excuse for our generation, as these sins can be readily overcome. Yet if we want to enlighten the people—and no one, as a rule, is more open to instruction than a young mother—it is necessary to become enlightened ourselves. Hardly a year passes that we do not see children's lives sacrificed to this lack of knowledge, originally from the physicians of the past, and sometimes, unfortunately, from the physician of the present. Straightforward, unequivocal language, coming from so high an authority as Jacobi, ought to stimulate all of us to contribute our mite to the cleansing of what have been called, upon high authority, Augean stables. In regard to artificial foods and substitutes for mother's milk, we find a vigorous opponent in the author. It may seem, in the light of the experience of others, that he is too rigorous. However that may be, his reason-



ing is good, even if not conclusive. It is needless to state that the physiology of digestion of infancy is not as well understood as that in the adult. We refer here especially to the processes going on during life in the stomach and intestine. Before a complete understanding of all these processes has been arrived at our deductions cannot be final. For the present, the feeding of infants must be based upon empirical as well as upon physiological grounds. Thus, to use Fairchild's method of preparing milk would be unphysiological for a young infant, because a process is introduced into the small intestine which ought not to occur there,—viz., pancreatic digestion and perhaps pancreas putridity; yet experience has shown, over and over again, that this method can be used with good results,—we were going to say with impunity. The chapter on "Biedert's Fat Diarrhœa" ends with the following sentence: "After all, it is not wise to swell the headings in our treatises by the introduction of a new chapter." This puts the whole subject, it seems to us, upon its proper level; it is just as rational to speak of starch constipation or apple diarrhœa as of fat diarrhœa. The fact that fats produce diarrhœa is as old as medicine itself, and if fats are persisted in, the result will be the production of an intestinal catarrh, like any other intestinal catarrh. It is pleasant to meet an author who does not give up the experience gained by himself and others on account of the prevalence of a fashionable theory. We find Jacobi saying that opium is indispensable in intestinal catarrh when the odor of the stools begins to be normal, although opium has no action detrimental to bacteria. Even the poor astringents, now much neglected because not absolutely fatal to bacteria, seem to be used still by the author. In concluding this notice, which we would gladly extend, it is necessary to call attention to the last chapter of the book, especially upon "Polypus of the Rectum" and "Fissure of the Anus." Both these conditions are so commonly overlooked that it is well to have their existence placed before us even in so small a book. Not only are they well treated, but briefly. It is to be hoped that in a future edition the festive printer may be more effectually inhibited, so that he may take fewer liberties in orthography, especially in that of proper names. If we might be permitted to make a suggestion, it would be that an index is added to the next edition. This book will have to be referred to very often, and nothing mars the pleasure of a good book so much as the absence of an index. It is needless to add, also, that the absence of an index also diminishes the utility of a book, for, after all, that which is most easily done is most frequently done.

F. F.

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THERAPEUTICS OF INFANCY AND CHILD-  
HOOD.

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(Continued from June Number.)

IV.—CONSTITUTIONAL DISORDERS.

1. *Anæmia.*

ANÆMIA is often the result of a hereditary predisposition, or congenital from some accidental cause. Mothers who suffered much during their pregnancies, or were delicate themselves, are liable to give birth to anæmic and puny infants. Premature infants, or those afflicted with congenital diseases, such as "cyanosis" or neoplasms, or smallness of heart and arteries, are anæmic, and apt to remain so. Another cause of idiopathic or primary anæmia is found in actual loss of material by copious suppuration, excessive exudations in pneumonia and pleurisy, or real hemorrhages, the results of which are sometimes not relieved through a whole lifetime. They are quite frequent in the newly-born or young, in true melæna, hæmophilia, umbilical bleeding, cephalhæmatoma; from hare-lip operations or ritual circumcision; from rectal polypi; from coryza, heart-disease, or abdominal stagnation, as epistaxis; or from ulcerations in diphtheria.

As these papers are meant to discuss therapeutics only, I cannot do more than simply allude to the direct and indirect causes of anæmia for the purpose of obtaining the indications for treatment. Among the former are prominent the administration of an insufficient amount or an improper composition of food and insufficient supply of oxygen. Among the latter I count every disease of more than a very temporary character; all those ailments which so change the alimentary digestive organs as to interfere with digestion; diseases of the organs of respiration, circulation, and elimination (kidneys); all feverish diseases, and particularly the infectious fevers (scarlatina, malaria, least of all typhoid fevers, unless they result in chronic intestinal ulcerations); diseases of the lymph system, the larger part of which are accessible to successful treatment. It is true that pseudo-leukæmia offers the same difficulties which we meet in the adult; but the many glandular swellings—"scrofulous" or not—permit of successful treatment, both preventive and curative.

All these affections, the number and names of which I do not care to multiply, are the more dangerous, and require the more dietetic and medicinal attention, the greater their detrimental influence during infancy and childhood,—that is, during the period of growth, in which the organism has not only to sustain itself, but to increase steadily. The latter consideration is a very important one. It includes the necessity to which I have alluded in a previous chapter, not to permit a morbid condition, either acute or chronic, to exhaust itself without interference. A disease shortened a day, a sleepless night less, a dozen of diarrhœal movements prevented, a racking cough soothed, a convulsion interrupted, an excessive temperature relieved, are just as many prophylactic points gained, and as many causes of persistent anæmia mitigated in their dangerous influences.

These considerations are the more weighty the younger the patient. For in regard to anæmia the young are in a very precarious condition indeed. The infant (and child) has less blood in proportion to its entire weight than the adult; this blood has less fibrin, less salts, less hæmoglobulin (except in the newly-born), less soluble albumen, less specific gravity, and



more white blood-corpuscles. It has a specific gravity of but 1045 or 1049 compared with that of 1055 in the adult. The total amount of the blood in the young is relatively small. Its weight, compared with that of the body in the newly-born, is 1 : 19.5. The relative figures in the adult are 1 : 13.

Hence it follows, from a practical point of view, that it is important not to permit the relatively small amount of blood in an infant or child to be unduly diminished or diluted. Thus the subject of feeding and digestion is of such paramount weight in pediatrics.

While it is a good rule to be careful in regard to the amount of *food* to be allowed in the beginning of a feverish disease, a fair quantity must be allowed after a while, provided it is fluid and well selected. Unless there be a contraindication in the condition of the stomach, mostly albuminous nutriment must be administered. During protracted diseases the danger of inanition becomes imminent, still more in the young than in the adult. Convalescence requires generous feeding and stimulation also, with this restriction, that the meals must be small and frequent, and the stomach sustained all the time. In this way many a case of secondary anæmia may be avoided.

Babies become anæmic when their mothers or nurses have too little milk, or when the supply is ample but of an improper quality. Nursing during a subsequent pregnancy must be forbidden. It must not be continued too long, certainly not beyond the protrusion of the first group or groups of incisors. Nor must it be continued beyond the tenth month if at that time no tooth has made its appearance. Many a case of anæmia or rachitis will be cured by a change of such faulty diet. It is better for the baby to develop teeth, bone, and muscle on barley or oatmeal and cow's milk than to become rotund with œdematous fat, and anæmic on his mother's powerful sympathy and powerless breast-milk. Maternal love does not improve the breast-milk of a person with a history of consumption, rickets, syphilis, nervous disorders, or intense anæmia. Sometimes even a healthy woman has a milk which is not adapted to that particular baby; then another woman or artificial food must be preferred. The addition of barley or

oatmeal and beef-soup or beef-tea is always advisable when a nursling becomes anæmic without having been afflicted with a tangible disease. A small piece of beef, half an egg daily, a crust of bread, may be added about the end of the first year. The diet ought to remain simple, and mostly fluid or semi-solid until the child is two years old. Avoid bad habits, such as fast eating, and enforce regular defecation, plenty of exercise out of doors, and undisturbed and long sleep in a cool room. Avoid crowded school-rooms and protracted lessons. "We have laws to protect children from being sent to work in factories, or to be employed on the stage, but none to protect them from the equally destructive, incessant schooling in close rooms, without air or exercise. There are too many books bought for Christmas, and too few skates."\*

The subject of nursing and artificial feeding, and of digestive organs, has been treated of but lately;† thus I abstain from discussing the matter here beyond the above fragmentary remarks. What, however, cannot be emphasized too much or too often is the necessity of resorting to animal food—soups, teas, peptones—in cases of infantile anæmia.

The medicinal treatment of anæmia must fulfil the causal indications first. That which depends upon chronic *gastric catarrh* requires, according to circumstances, alkalies or hydrochloric acid, pepsin, bismuth. Beside the well-known subcarbonate and subnitrate, the salicylate has made many friends of late, deservedly. Pepsin and dilute hydrochloric acid are best combined; a baby of a year may take six or eight drops of the latter in six or eight ounces of water daily, or the acid may be mixed with milk according to the formula given in a previous essay. Disease of the kidneys has its own indications. The regulation of the heart's action—which, when abnormal, is the most frequent cause of habitual epistaxis, and of gastric catarrh and hepatic congestion—is the first indication in secondary anæmia. Many a gastric catarrh will not get well without digitalis or some other *cardiac tonic*, and persistent nose-bleed-

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\* Archives of Medicine, vol. i. p. 1, February, 1881.

† A. Jacobi, "The Intestinal Diseases of Infancy and Childhood."—Detroit, 1887.

ing is apt to improve immediately after the administration of digitalis, with or without iron. Thus, in a great many cases, anæmia is "cured by digitalis." In a similar manner digitalis can be utilized for the purpose of more competent oxygenization of the blood. When the heart is weak, and the lungs, by virtue of old pneumonic infiltrations, offer too great a resistance to an easy circulation in the pulmonary vessels, it is again digitalis (or its equivalents) which facilitates the extensive contact of the oxygen of the atmosphere with a larger number of blood-cells.

The *insufficient innervation* of the muscular tissue of the heart, stomach, and the rest, which is one of the most serious results of anæmia, is corrected very happily by *strychnia* or other preparations of *nux*. An infant a year old tolerates and requires one-fortieth of a grain of *strychnia*, or one-fifth of a minim of the fluid extract of *nux*, daily, for a long time in succession. These preparations may easily be combined with any other medicinal administrations.

*Iron* is looked upon as the sheet-anchor in anæmia. It is mostly indicated in cases of primary uncomplicated anæmia. A catarrhal stomach does not bear it well; when the stomach, however, is abnormal in consequence of the general anæmia, iron improves both the general condition and the stomach. In many of these cases the addition of bitter tonics is advisable; *strychnia* is perhaps preferable. Anæmia after malaria, dropsy from anæmia, and chronic nephritis, anæmia with neuralgia, anæmia with (and from) valvular diseases which do not result in local congestion,—mainly incompetency of the aortic valve,—are greatly benefited by iron. Anæmia after chronic diarrhœa requires great care in its use; in most cases it can, or ought to be, avoided. While it is very beneficial in the predisposition to hemorrhage, it must be avoided in hæmoptisis. It is contraindicated in inflammatory fevers, for it increases pulse, arterial pressure, and temperature. But in infectious fevers, such as erysipelas and diphtheria, it is very efficient. It requires good digestive powers, and, to combat anæmia only, no large doses. The total amount of iron introduced into the system in the daily food does not exceed much a single decigramme (one and one-half grains), and that con-



tained in the blood of the adult has a total weight of three grammes only. Still, it is quite possible that the iron introduced into the stomach fulfils more indications than that of supplying hæmoglobin.

Of the preparations mostly in use, either officinal or otherwise, I have mostly employed dialyzed iron, a few minims several times daily, the tincture of the malate, twelve to thirty minims daily, and the same, or somewhat larger doses, of the tinct. ferr. acet. æth. and tinct. ferr. chlor. The dry preparations are the phosphate, one to two grains three times a day, and the same doses of the carbonate (saccharated). The latter is aptly combined with proper doses of bismuth. The syrup of the iodide of iron is well tolerated by the youngest infants; as many drops as the baby has months may be given three times a day up to eight or ten drops a dose. It is well tolerated by the stomach, in which the iodine is freed from the iron and acts as an anti-fermentative. Besides, experience appears to confirm the theoretical inference that it proves its power as an absorbent in cases of anæmia complicated with glandular enlargements. The syrup of the hypophosphites cum ferro of the Pharmacopœia may be given in larger doses; this is the preparation which I frequently select when I mean to add the fluid extract of *nux vomica*. It is self-understood that I prefer the legitimate preparations of the Pharmacopœia to the wares of the agents and advertisers, "physicians' samples" or no.

For subcutaneous administration the pyrophosphate of iron with citrate of sodium and the albuminated iron have been recommended. As anæmia is a chronic condition which requires "chronic" treatment, it is not very probable that this mode of employing the remedy is very available.

The administration of iron appears to have an indirect effect also, which is apt to do much good. As a rule, the inhalation of oxygen gas, continued for five or ten minutes, in intervals of from an hour to two hours, seems to improve sanguification and metamorphosis considerably. This wholesome action, it always seemed to me, was most perceptible while iron was administered. To admit oxygen red blood-corpuscles are required; it appears that the influence of iron

on their organization and numbers renders the introduction of oxygen into the blood easier and more beneficial.

Some of the worst forms of anæmia are greatly benefited by *arsenic*. They are those which result from long-continued inanition and slow convalescence, in which the stomach does not suffer; from primary catarrh; from chronic malaria; from chronic tuberculosis of the lungs; from chronic glandular swellings of a malignant type, either lymphoma or sarcoma. In all of these forms it is highly useful. The doses need not be large, but may be increased slowly. One-hundredth of a grain of arsenious acid, or one drop, or one and a half of Fowler's solution, three times a day, after meals, the latter amply diluted, are well borne for weeks, even months, without interruption, by a child of four or five years. In malaria, the remedy may be given with quinia (and iron), in other forms with strychnia (and iron); in phthisis, with digitalis.

The gradual increase of the doses of arsenic may be effected in the following manner: A drachm of Fowler's solution is diluted with sixty drachms of water; three doses of this mixture are given daily. If the initial dose be one drop, give a teaspoonful; the next dose is a teaspoonful + one drop, the third dose a teaspoonful + two drops, and so on, until the sixty-first dose consists of a teaspoonful and sixty drops. Thus the original dose is gently and slowly doubled in twenty days.

Children bear arsenic better than adults, and very much better than senile patients. Still, even they must not take it when they are affected with gastric disorders; nor continue it when in the course of treatment conjunctivitis, œdema of the eyelids and face, or diarrhœa make their appearance.

(To be continued.)

## ON VENEREAL AND GENITO-URINARY DISEASES OF CHILDREN.

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(Continued from June Number.)

### VII.—FUNCTIONAL AND OTHER DISORDERS OF THE GENITO-URINARY ORGANS.

BESIDES the syphilitic affections which have been considered in previous numbers of the ARCHIVES, other disorders of the genito-urinary organs occur in children, and notably among them are urethritis and vaginitis, diseases which are by no means uncommon in young children and infants, and which may proceed either as a direct infection from a diseased person, or else as a result of some intercurrent and accidental cause. There is no disease which is so liable to involve the surgeon in trouble than this class of affections of the genito-urinary organs, especially if he be not on his guard and ready to recognize those diseases of this kind which are due to infection and those which are not; and it is important to be able to recognize the difference, because oftentimes questions of a medico-legal nature hinge entirely upon the diagnosis and opinion of the surgeon,—a point which will be taken up in the next paper, when we shall consider the medico-legal aspects of venereal and genito-urinary affections. Undoubtedly some cases do occur in which infection takes place from patients who are suffering from gonorrhœa, and this is notably the case where children have slept with relatives affected with gonorrhœa without any attempt having been made against their chastity. In other instances undoubtedly attempts at rape have been made upon female children, sometimes for purposes of gratifying lust, and at other times in order to get rid of an



old disease, in accordance with the ridiculous superstition, not at all uncommon among ignorant and uneducated persons, that a long-standing clap may be cured by cohabitation with a young virgin. The symptoms vary somewhat according to sex, and I shall take up first urethritis and afterwards consider vaginitis.

The first thing which attracts the parent's attention is that the child cries whenever the act of micturition takes place, and in consequence of the pain delays as far as possible emptying the bladder. Upon examination, supposing it to be a male child, the napkin will be found covered with a yellowish secretion, which apparently exudes from under the foreskin; and, as in the larger proportion of children, except those of Jewish birth, the foreskin remains intact, it becomes a question whether this discharge really comes from the urethra or from a tight foreskin. In the larger proportion of cases undoubtedly it is more a balanitis than a true clap, and this balanitis is induced by a lack of cleanliness, as well as by decomposition of the smegma of the part.

When the child is brought to the surgeon, it is frequently found that the prepuce is swollen, œdematous, and inflamed, and that a copious secretion issues from the opening of the foreskin, which is often contracted and is very small. During the act of micturition the water finds its way out very slowly, oftentimes only drop by drop, and the whole foreskin becomes enormously distended, or "ballonné," from the retention of the urine between the glans and the inner layer of the foreskin. This gradually subsides as the fluid finds its way outward, and the parts then resume their former condition, still remaining, however, œdematous and swollen. The scrotum is also oftentimes excoriated, as are also the inner part of the thighs and the buttocks, and the former frequently becomes œdematous from the irritating action of the decomposition of the urine and the secretion which flows from the inflamed prepuce. If the part be cleaned and washed out with a little warm water, the surgeon finds that it is impossible to retract the foreskin, and it is a matter of much difficulty to decide whether the discharge is due to a balanitis or to a gonorrhœa. Under these circumstances the best plan of procedure is to bathe the

part frequently in hot water, and keep it wrapped in the intervals in a weak solution of lead and opium, in order to relieve as far as possible the inflammation and swelling of the part. If, after three or four days' use of these measures, no improvement takes place, it is far better for the surgeon to operate at once by making a dorsal incision, or, better still, two lateral incisions, and thus allow a free exit to all matter contained beneath the prepuce, as well as a free vent to the urine. This is easy of accomplishment, providing no adhesions have taken place between the foreskin and the glands. If such adhesions have taken place, it will be necessary to separate them in order to obtain relief. Of course, care should be exercised that the surgeon's scissors do not go into the urethra, else very serious trouble naturally ensues from slitting up the urinary canal.

These adhesions are sometimes the cause of great trouble, being very tenacious, and in one or two instances I have seen them so much so as to make it a matter of impossibility at the time to thoroughly separate them. Under these circumstances it is well to make multiple incisions with the scissors along the free border of the inflamed prepuce, which have the effect, by bleeding, of causing a reduction of the inflammation and subsidence of the œdema and swelling. As soon as the inflammation has subsided, the surgeon should then carefully, with the director or probe, tear up all adhesions which occur between the glans and the foreskin, and finish the operation of circumcision which was begun by his lateral incisions. It will then be seen whether the discharge is really urethral, or whether it is merely a very acute balanitis. And here it will be perhaps well to say a word as to the advantage of circumcision of all male children mainly from a hygienic point of view.

In young children or in infants the operation is not a matter of serious importance. Among the Hebrews and Moham-medans the operation is generally done about the eighth day, and merely consists in the removal of the foreskin directly among the orthodox, as I am informed, by the thumb-nail of the rabbi, but more generally now by the knife of the surgeon. The parts then are retracted, and heal up practically of themselves without the intervention of sutures.

If, however, it is proposed to have the operation done *secundum artem*, it is well, after the first incision is made and the foreskin removed, to retract the entire foreskin and add two or three sutures to keep it in place. That is usually all that is requisite. The performance of this simple operation obviates much trouble for the child in future life, not only as regards contracting disease, but also with regard to the numerous functional disturbances with which young men with long foreskins are so prone,—viz., balanitis, excoriations, and superficial ulcerations of the mucous tissues of the foreskin and the surrounding integument. If the disease be simply balanitis, painting over the excoriated surfaces with a weak solution of nitrate of silver, one or two grains to the ounce, or a similar solution of the sulphate of zinc, with dry dressings of subnitrate of bismuth, will generally suffice to bring about a cure. Dry dressings in these cases are much better than wet ones, as these latter have a tendency to macerate the part and cause more or less thickening, and sometimes a secondary œdema, which is never the case with the dry dressing.

If the discharge comes from the urethra, it then becomes a question, perhaps, for the surgeon to determine how far the urethritis may be due to the infection and how far to other causes, and he should always steadily bear this one point in mind, that urethritis in very young children is not infrequently the result of intestinal disturbances, of colic, excoriations and irritations about the anus, eczema of the anus, and the presence of ascarides, and he should be particularly guarded against listening to or fostering the idea of impure intercourse or infection unless he is himself absolutely certain that it must be due to that cause, lest, perhaps, he may unjustly accuse some innocent person of being the cause of the child's disease.

And now comes up a very important and interesting question in this respect. In view of the recent statement and widely-spread belief in the existence of a specific cause for gonorrhœa in the presence of the gonococcus of Neisser, the surgeon under these circumstances would probably examine the discharge microscopically to detect the existence of this parasite. It has been claimed to be found in the secretions in vaginitis and vulvo-vaginitis in children by Wernicke in the *Revista Argen-*



*tina de Ciencias Medicas*, Buenos Ayres, 1886, and by others in the discharges of children of both sexes. And if the surgeon is disposed to regard this point as definitely settled, and to consider the presence of the coccus as absolute proof of the existence of a clap, he would, of course, regard the case as one of infection, and if he found any one to whom suspicion might point, would be very prone to consider him as the cause of the infant's disease, and perhaps so state. Now, I regard this point as by no means definitely settled as yet, certainly not sufficiently so for us to be able to state positively that the gonococci may not be found in other discharges besides those of gonorrhœa, and under the circumstances I should certainly advise very strongly against considering their presence or absence as confirming or negating a diagnosis of gonorrhœa; nor should I deem the surgeon justified, with our present knowledge, in considering it as a settlement of the question at issue. It may, perhaps, cause the surgeon to suspect, but he should be very careful how he allows his suspicion to find its expression in positive statements. Indeed, there is no question so difficult to settle, oftentimes, as this question of the supposed infection of children by a clap, and I do not know, nor have I ever yet seen explained, any absolute points which would enable us to arrive at a positive conclusion. The one which comes nearest to it is undoubtedly the presence of this parasite, but before it can be accepted without qualification it must be absolutely proven that it occurs in all cases of gonorrhœa, and in no other cases except those where the discharge comes from a gonorrhœal origin.

As I have said, oftentimes the discharge comes from irritation of contiguous parts, and the surgeon, of course, should carefully sift and exclude, one by one, all these possible sources of the disease before arriving at the conclusion that it is due to infection, and even then he should examine his little patient for evidence of stone or inflammation of the bladder, which are oftentimes the cause of urethral discharge, before arriving at the conclusion that he has to deal with a venereal disease. Among male children this question does not arise so frequently as it does among female children, because they would be less likely to be infected by sleeping with persons suffering from

gonorrhœa, nor would they be so liable to be the subjects of attempts against decency, but with female infants the case is different, and girls are often brought to the surgeon suffering with inflammation of the vulva and the anterior portion of the vagina, accompanied by inflammation, œdema, excoriations, and an abundant purulent discharge. The mother, perhaps, indirectly influences the surgeon's mind by stating that she suspects So-and-so of an attempted rape, and unless the surgeon is upon his guard he may very readily fall into the trap which perhaps is intentionally laid for him.

Now, the same causes hold true for female children as for male. Trouble in contiguous parts may be the cause of the vulvo-vaginitis of the child; and this cause removed, the child's genital inflammation subsides, sometimes by itself. Under these circumstances the surgeon, while listening to what is told him, should not cause it to influence his feelings in the matter one way or the other, but he should depend upon what he finds upon examination to determine the cause in his own mind.

And first, as regards the question of rape. If such has been attempted, the child will bear marks of violence caused by attempts at intromission. A microscopical examination of the discharge, particularly after it has been gathered upon the napkin, would lead, under these circumstances, to the presence of spermatozoa, which, of course, would be a strong point bearing upon the question of rape. If the patient be a grown-up child,—that is to say, ten, twelve, or fourteen years of age,—its own statements should be accepted with much reserve, because children are extremely imaginative, prone from repetition of a falsehood to believe it the truth, and oftentimes impelled by fear and intimidation to tell whatever story the parents may choose to state. Under these circumstances, the marks of violence, which will last for some weeks after the attempt, and, if possible, the examination of the secretions upon the clothing at the time the assault was made, would go far towards settling the point by the presence and absence of spermatozoa. If this microscopic examination has been delayed for some time after the attempt, of course very little information will be gained, and such a case as that should be

viewed with extreme suspicion, provided, however, no marks of violence, such as rupture of the perineum or hemorrhage from an attempt at rupture of the hymen, are present. These acute inflammations, due to other than gonorrhœal infection, usually subside in a short time by cleanliness, repeated use of warm water, and the employment of some dry dressing, such as the subnitrate of bismuth, lycopodium, or ordinary starch powder.

It has been stated by some authorities that gonorrhœal rheumatism may occur in young children as the result of infection, and that some of the cases of synovitis which have been ascribed to other causes are really due to this. Lucas (*British Medical Journal*, 1885) gives the case of a child who contracted ophthalmia neonatorum from the mother. There was strong suspicion, but no absolute proof, that the mother's discharge was gonorrhœal, and the child itself apparently had no genital discharge. It was attacked, however, with a synovitis of the left knee and the left wrist, which Lucas believed was due to gonorrhœal infection, and which was cured at the end of two months. There was no evidence of syphilis in either parents or the child.

I have myself not seen any cases which I could satisfy myself were cases of gonorrhœal rheumatism in infants. In children I have seen cases of rheumatism which were evidently gonorrhœal, but in which the gonorrhœa was obtained in the usual manner, by coitus, and which was freely admitted by the patients themselves.

Phimosis in male children is a frequent cause of functional disturbances, not only by inducing inflammation and swelling of the part, but also by producing painful micturition with incontinence of urine. In these cases, the cause being once established, the cure readily follows by the simple expedient of a resort to circumcision, when all the symptoms of painful micturition and incontinence of urine will disappear.

But, besides this cause, incontinence of urine frequently occurs in children of both sexes as a nervous affection, and the habit, having been once established, is frequently kept up involuntarily. Nurses and parents are sometimes responsible for this condition of affairs, in consequence of giving children



much fluid to drink before they go to bed, and not seeing that the bladder is properly emptied, and sometimes, also, from punishing the child for wetting the bed, which induces a nervous dread of repeating the act, which is sure to be done almost as soon as the child is asleep. When this occurs, the child should be given but little fluid for some time before retiring, and it should always be made to empty its bladder immediately before going to bed. This will sometimes suffice to check the evil, and if not, a small dose of bromide of potassium or a few drops of the tincture of belladonna may be given to the child at bedtime. Of course, the surgeon should himself examine to see that there is no cause for this peculiar condition of affairs, because sometimes it may be due to a genital defect similar to a case reported by Mr. Adams in the *Glasgow Medical Journal*, 1885. The case was briefly as follows:

The child, twelve years of age, apparently healthy and well nourished, had been troubled since her infancy with complete inability to retain her urine. This condition seemed to come on more particularly when she was walking about, and she was never able to control the discharge. When in the recumbent or sitting posture for some time a quantity of urine would collect in her bladder, and would then be voided in the usual manner, but when she walked about there was a continuous escape. In consequence of this a urinous odor was emitted from the patient, and unless great care was taken her legs and thighs would become excoriated and painful, especially in cold weather. She was treated for six months with various internal remedies—iron, belladonna, and the like—without any special improvement. An examination of the genital organs revealed the existence of a mesial division, which started from the mons veneris in front, and passed through the clitoris to the anterior wall of the urethra, the mouth of which was widely dilated and could not be properly contracted. An operation was performed by incising the internal surface of the divisions of the clitoris, and by dissecting up a flap from the floor of the space between these two pieces. The parts were then united by fine silver sutures, and the wound was dusted over with iodoform, and oiled lint applied. For the first few days after the opera-

tion, apparently from the swelling of the parts, as well as the rest in bed, the child could retain her urine and void it when the necessity arose, but gradually this power became lost, and matters fell back again into their old condition. Six weeks afterwards it is stated that the patient could keep her water for a short time when moving about, and her mother is of the opinion that her clothes are not nearly so soaked as they used to be, and that the child can pass more water at a time than she did formerly. But it was evident that there was very little real improvement. In other respects the girl was perfectly healthy, and menstruation had not yet occurred.

In addition to this, in young female children a polypus of the urethra is sometimes the cause of the incontinence, and a stone in the bladder in both sexes will not infrequently produce similar disturbances. Here, of course, surgical interference is requisite, and the removal of the polypus and of the stone at once produces cessation of the incontinence and other symptoms.

I have already spoken of phimosis in relation to the production of discharges from the prepuce, but it may also be the cause of producing other functional disturbances. Incontinence of urine is one of these, and particularly if the phimosis be complicated with an adherent prepuce, and masturbation is another. When the prepuce is adherent to the glans penis it will oftentimes produce much irritation of the organ, and induce continued priapism. This irritation oftentimes compels the child to rub the erect organ against the belly with his thighs until an absolute orgasm occurs, without, however, any emission. The child, under these circumstances, becomes rigid, has convulsive movements, sometimes amounting almost to incomplete opisthotonus, the head is thrown back, the eyes rolled up, the countenance suffused, sometimes almost purple, and the tongue oftentimes protrudes to a slight extent from the mouth. These symptoms are at times so alarming as to induce the belief in the parent's mind that the child has convulsions, and the surgeon is consulted for the cause. The surgeon, after examining the patient for the cause of the trouble, should always look at the genitals to see if any cause exists there for the nervous attacks, and he will oftentimes find the patient's

organ in a condition of erection, and if he watches for a few moments the child will go through its performance of flexing the thighs on the abdomen, compressing the organ between them, and going through the motions of rubbing the penis against the abdominal walls. After a while the spasmodic convulsions will come on, and the cause of the trouble stands revealed. If the trouble be due, as it so often is, to phimosis and an adherent prepuce, these adhesions should be at once broken up and circumcision performed. The internal method of treatment is, in my opinion, of no use, and the only thing under the circumstances is the operation which I have advised.

Sometimes there is no phimosis to account for it, and it may be induced either by retention of urine in the bladder, which sometimes happens from spasmodic contraction in the urethra, and sometimes from the presence of ascarides in the rectum. If it be due to a full bladder, the passage of a small bougie occasionally and attention to emptying the bladder before the child sleeps will generally relieve the trouble, and then he should be carefully watched when asleep to prevent as far as possible any friction of the genital organs. In extreme cases it may be advisable to paint the penis with a little tincture of iodine, applying the iodine in a ring around the middle of the organ, so that if the patient attempt friction the pain will cause him to desist; but it is seldom that such an extreme measure as this is required. The same habit is also indulged in by female children, and is caused either by the presence of a vulvitis or excoriations about the vulva of the child. If these are present, touching them with a solution of nitrate of silver, ten or fifteen grains to the ounce, and the application of dry dressings will generally remove the cause of irritation, and with it the tendency on the part of the child to indulge in this habit. It is very seldom that infants touch the part themselves with their hands, the means generally being in the case of males friction against the abdominal wall, and in female children by rubbing the thighs together, and thus irritating the vulva. In female children, if this habit has been long indulged in, the clitoris will sometimes be found enlarged and hypertrophied, and then may arise the question as to an amputation of some of the hypertrophied tissue. This should



not, however, be resorted to until other means have first been tried. In grown-up children this habit, I am inclined to think, is not of infrequent occurrence. The example of older children will oftentimes induce this habit, which is frequently extremely difficult to break up. If the child is capable of being reasoned with, it should be told of the consequences which are likely to ensue from a continuance of the habit, and it should be urged as much as possible to abandon it. But sometimes the act is involuntary, and done during sleep. Under these circumstances the child's hands should be confined during sleep, so as to prevent it reaching its genital organs, and the best way of accomplishing this is to tie the child's hands to the bedpost, leaving enough freedom to move in the bed, but not permitting the genital organs to be reached.

Besides this, in male children the genitals may be irritated by the local application of the tincture of iodine, vesicating fluid, or even a blister, so that if the act is indulged in the pain will wake the patient up, and perhaps the act may be stopped at once. With female children such a procedure is inadmissible from the extreme inflammation that is liable to occur, and the only method is by restraining the child in the manner described, by confining the hands to the bedpost. Some years ago I saw an ingenious instrument that had been devised by an adult patient to cure himself of this habit. It was a cage made to fit over the entire pubic region, from the hips to the upper part of the thigh. The patient got into this at night-time, closed it with a padlock, turned out the light, and threw the key down on the floor. By this means he broke himself of his habit, as he could not reach his genitals and would not get up to find the key which he had thrown away. In extreme cases some such instrument might be devised, but it depends entirely upon the ingenuity of the surgeon to devise methods to break up this habit, which is much more difficult to overcome in girls who have once contracted it than it is in boys.

Sometimes male infants are the subjects of hydrocele, which produces more or less disturbance by the enlargement of the part from the collection of fluid. If the hydrocele is uncomplicated, it is usually very readily removed by evacuating the

contents of the sac and passing a small seton through the scrotum. A silk thread will answer all the purposes, and it may be withdrawn after a few days, as soon as inflammation has been set up in the sac. This usually causes adhesion of the tunics and relief from the affection. But when it is encysted it is sometimes more difficult of treatment. The encysted portion sometimes occurs in the cord close to the ring, and it becomes a nice question in diagnosis between that and hernia; but the fact of its non-reduction and translucency to light will generally settle the question between the two affections, and the exploration of the sac with the needle, causing evacuation of its contents, will show at once what the trouble is. The injection of a few drops of the tincture of iodine in water will sometimes suffice to cure the trouble; and if this does not do it, it is then better at once to open the sac, pack it with cotton, and thus produce adhesive inflammation.

Sometimes a testis is retained within the abdomen, not having come down beyond the ring. An examination of the scrotum will readily reveal the absence of the testis, and the question then comes up with regard to inducing it to descend. Sometimes gentle traction upon the testis itself, repeated for several days, will induce it to come down; but care must be taken not to excite inflammation and a consequent epididymitis or orchitis. If it produces little disturbance, it had better be left to itself until the child grows older, when it oftentimes will descend spontaneously. If not, there is no harm in leaving it where it is, provided no inflammation or disturbance is set up by its presence. If it becomes inflamed and swollen, and especially if it be liable to repeated attacks of inflammation, it may be necessary to remove it, when the usual methods of removing retained testes may be resorted to.

Orchitis sometimes results in infants and young children from a variety of causes. Those due to syphilis have already been spoken of in one of the preceding papers, but, besides this, orchitis may result as a consequence of cold and from gonorrhœa. When due to a cold its duration is short, and it is usually confined to a slight swelling of the epididymis, which is tender to the touch and not very much enlarged, and

subsides in the course of a few days, if the patient be kept quiet. It leaves no thickening or induration behind.

In gonorrhœal affections the epididymis is the chief seat of the disease. It becomes inflamed, swollen, and very painful to the touch. In this class of affections the body of the testis is not usually attacked, the brunt of the disease falling upon the epididymis, which remains swollen and tender for some time, and nearly always induces more or less permanent thickening of this portion of the epididymis and occlusion of the vas deferens. In these cases the treatment consists mainly of rest and the application of heat to the part rather than ice. Hot applications in these affections of the testes in children oftentimes relieve the pain and irritation quicker than cold. As the inflammation subsides and the induration is left behind, it is better not to resort to strapping, as that oftentimes induces atrophy of the testes from compression. The local application of mercurial and belladonna ointment, spread upon a cloth and kept in contact with the part, offers the best means of relief and cure.

A male child is sometimes brought to the surgeon with the story that, instead of passing his water through the penis, it leaks away from some point either near the scrotum or half-way along the floor of the canal; and upon examination the surgeon finds his patient suffering either with epi- or hypospadias, where the urethra, instead of being developed to the meatus, stops short either at the peno-scrotal angle or else at the end of the fossa navicularis. If the child is very young, it is better to delay operating until later, because the parts are so liable to be irritated from various causes as to render the operation of no avail. As soon as the patient grows older, the usual operation for the relief of epi- or hypospadias may be resorted to. This is usually done by the formation of a flap taken either from the skin of the penis or else from the scrotum, and so forming an artificial floor for the urethra. Where the whole of the urethra is wanting from the peno-scrotal angle forward, very little can be done in the way of cure. But if the defect be only partial, the methods spoken of will oftentimes be of avail.

Extrophy of the bladder is another lesion which sometimes



occurs in children, and for which nothing can be done except by surgical means. In female children adhesion of the vulva sometimes takes place, which is of importance not only as regards retarding the passage of the urine, but also later on with the escape of the menses. Operative procedure is the only method to be resorted to, and a careful examination should first be made in order to settle the question as to whether it is merely adhesion of the vulva or whether it may prove to be a case of imperforate vagina. Of course, in young infants it is oftentimes impossible to decide this question, and it is better to defer any operation, except in so far as to relieve any impediment which may arise to the flow of the urine; and later on, at the age of puberty, a fresh examination may be made to determine the question as to whether an imperforate vagina is present or not. Sometimes the vagina is closed for only a portion of its tract, and the recently-developed uterus may be felt beyond. Under these circumstances an operation should be resorted to at once in order to afford a free exit for the menses.

An imperforate hymen is another complication which may ensue in children, and is oftentimes of importance from its causing retention of the menstrual flow when this function is established. Preceding the age of puberty it is perhaps better that no operative procedure should be resorted to, but as soon as that age is reached, surgical interference will sooner or later be required. This membrane is sometimes exceedingly thick, and requires the use of the knife in order to make a passage for the imprisoned menses. As soon as this has been evacuated, it is well afterwards to remove the hymen, and thus prevent any further disturbance.

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(To be concluded.)

## THE MORBID ANATOMY OF CONGENITAL TALIPES EQUINO-VARUS.

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THE specimens which form the subject of this paper were taken from a male infant with congenital equino-varus of both feet, who died of broncho-pneumonia at the age of five and one-half months. The degree of deformity was almost extreme in the left foot, less marked in the right. The child had been under treatment by the traction method with plaster of Paris bandages since it was six weeks old. Both Achilles tendons had been divided five weeks before death.

The patient was treated at the New York Polyclinic in the service of Professor Gibney, through whose kindness I have been enabled to make these investigations.

At the autopsy the feet were in a position of moderate varus. Gentle pressure with the hand against the anterior segment of the foot removed the varus without difficulty, but it returned at once when the foot was released. No sign of the cutaneous puncture at the site of the tenotomy could be seen. The skin over the outer side of the ankle was loose and wrinkled, over the inner side it was tense; on palpation some contraction of the internal plantar ligament was felt. Before treatment this contraction was much more prominent; dissecting off the skin, a thick, succulent-looking layer of tissue was seen on the dorsum of each foot to the outer side and in the superficial fascia. Under the microscope this structure was found to consist of connective tissue, with occasional elastic reticular fibres, and large branching cells anastomosing with each other. Running through this was albuminoid tissue. The vascularity of the whole structure was very slight. At the point where the tenotomy had been made the sheath of the tendon was firmly attached to the tendon itself and to the tissues

posterior. The tendon in this situation had a uniform circular enlargement three-eighths to one-half an inch in length, the exact limits of which could not be clearly defined.

This thickening represented the amount of separation between the ends of the divided tendon at the time of the operation. In spite of this splicing, as it might be called, the tendon is still about a quarter of an inch shorter than other Achilles tendons taken from infants of the same age with normal feet. The insertion in this case appeared to be more to the inner side of the posterior surface of the os calcis than natural because of the slight outward tilting of this extremity of the bone. The attachment was higher than usual, and the tendon throughout its whole length lay well to the inner side of the leg. The remaining tendons which cross the ankle-joint differed from the normal but slightly. The anterior tibial hugged the bones closely. The posterior tibial came well forward at the inner malleolus and was shortened. Behind this malleolus the tendons appeared to be situated more to the inner side than usual because of the changed relations of the bones.

The muscles in the leg and foot are unchanged to the naked eye, and when examined under the microscope were found to be perfectly healthy in structure. Removing all the soft parts except the ligaments, it was impossible to flex either of these feet beyond ninety degrees without rupture or displacement. In an undeformed child of this age if the leg is held perpendicularly with the foot elevated, the latter falls into a condition of extreme flexion merely by its own weight,—a striking contrast to the condition in this dissection.

The specimen freed from the soft parts showed the following curious changes: 1. The tibia and fibula were rotated on their vertical axes as well as on each other, so that the fibula, instead of being in its proper position external to the tibia, is almost entirely posterior to it. 2. The foot had become so twisted that its plantar and dorsal surfaces looked directly inward and outward, and were in a plane continuous with the bones of the leg. 3. These bones appeared to rest upon the inner border of the foot rather than upon its dorsum. This is shown in Figs. 1 and 2.



FIG. 1.



The changes in the ligaments about the ankle-joint, both in length and in position, were as follows: 1. The anterior

FIG. 2.



ligament was shortened and its point of attachment to the astragalus was posterior to the normal point of insertion. 2.

The contiguous edges of this ligament and the deltoid were united. 3. The anterior fibres of the latter were shortened and thickened. 4. The plantar ligaments were all notably shortened, especially at their inner edge. 5. The superior astragalo-scapoid was slightly lengthened and thin. 6. The middle fasciculus of the external lateral ligament was thickened and cord-like. Instead of passing obliquely backward it ran directly downward, and was attached well *in front* of

FIG. 3.



Talipes equino-varus right foot, infant aged five and one-half months.

the middle of the calcaneum. 7. The posterior fasciculus of this ligament was also shortened and thickened.

After completely severing the attachments of the internal and external lateral ligaments of the ankle-joint, it was still impossible to flex that joint beyond ninety degrees without displacing the tarsal bones.

On looking at the foot as a whole and before examining each bone separately, several points of interest presented: 1,

the peculiar relations of the foot to the leg bones and these bones to each other, as mentioned above; 2, the projection of the head of the astragalus into the dorsum of the foot; 3, the attachment of the scaphoid to the inner malleolus; 4, the relation of this bone to the astragalus; and, 5, the apparent absence of the normal prominence of both malleoli. A comparison of Fig. 3, a sketch of the deformed foot, with Fig. 4, a normal foot from an infant of the same age, shows most of these points very well.

FIG. 4.



Right foot, from an infant five and one-half months; normal.

In order to appreciate the changes in the individual bones I dissected out and carefully examined the bones of the feet of fourteen infants between the ages of four and one-half and six months. In none of these were there any signs of club-foot.

In describing the deformed specimens only their points of difference from the normal are noted.

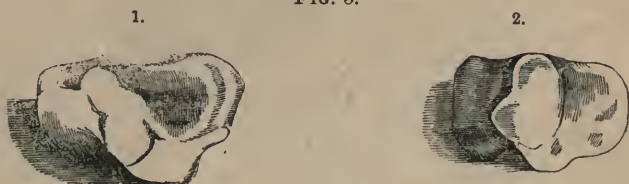
The os calcis showed marked changes (Fig. 5).

The external aspect is convex from before backward with the bulk of the convexity in its anterior half. When articulated the bone extends somewhat farther forward than the head of the astragalus (Fig. 4). It is, therefore, considerably



elongated. In this specimen it is lengthened from one-eighth to one-sixth of its own length. The anterior articulating surface is directed somewhat inward as well as forward. The

FIG. 5.



Superior aspect of abnormal (1) and normal (2) calcaneum, from infants aged five and one-half months; left foot (natural size).

superior articular surface was increased in extent, and extends nearly to the posterior edge of the bone (Fig. 6). The bone itself is larger and more massive than any of the specimens used for comparison, although some of them are from two to three weeks older. It was also slightly rotated internally on its longitudinal axis.

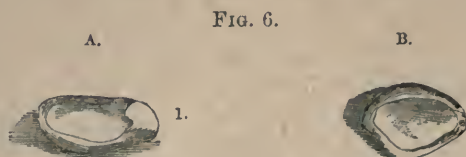
The cuboid deviated very little from the normal. There was possibly a small increase in the length of its external surface, but this was scarcely noticeable. The concavity of this surface was less pronounced than normal.

The cuneiform bones were normal in shape, position, and relations.

The scaphoid was greatly changed. Anteriorly there is nothing to be noted. Its external surface is only one-third as wide as the internal. It was elongated from side to side, thus giving it a rectangular shape (Fig. 6, A). In the undeformed bone the outer and inner faces are equal in width, and the bone is roughly cuboidal in shape (Fig. 6, B). The posterior face presented two facets separated by a sharp ridge. The inner of these (Fig. 6, A, 1) covered the inner third of this surface and projected backward, and joined the anterior face of the internal malleolus. The outer facet curved round the head of the astragalus and round on to its inner lateral surface.

The union mentioned above between the tibia and scaphoid was devoid of special synovial membrane, bursa, or lubri-

cating fluid. The connection between these bones was made very close and firm by strong fibrous bands, which were con-



Posterior surface of abnormal (A) and normal (B) scaphoid bones, from left foot of infants aged five and a half months, in their normal position when articulated (natural size).

tinuous internally with the deltoid, externally with the anterior lateral ligaments of the ankle-joint. In none of the normal feet was there any such relation found between scaphoid and malleolus.

As is very well shown in Fig. 3, the greater part of the scaphoid is *internal* to the astragalus instead of *in front* of it. This is a direct consequence of the above changes.

The deviations of the astragalus from the normal were very marked (Fig. 7).

Fig. 7, A, 1, 2, 3, and 4, presents the superior, external, internal, and inferior surfaces of a deformed astragalus from the left foot; B, 1, 2, 3, and 4, show by way of contrast the same surfaces in a normal bone from left foot. Both bones are taken from children aged five and one-half months. (Natural size.)

The body of the bone was increased in size, and deeper in front than behind. Its superior articulating surface was elongated, and only slightly convex from before backward. The transverse diameter of this surface was narrow behind, broadened in front, corresponding to the alteration in size of the bone (Fig. 7, A, 1).

The posterior extremity was flat, and resembled the thin end of a wedge (Fig. 7, A, 2). The facets on the inferior surface for articulation with the greater and lesser processes of the os calcis were increased in extent and changed in shape. The posterior was nearly twice the normal size (Fig. 7, A, 3). These facets were widely separated from each other, and the

groove in which the interosseous ligament is inserted was directed nearly antero-posteriorly instead of from side to side. The inner malleolar facet was prolonged forward. The outer facet was also increased in extent. The planes of both these facets are vertical, while in the normal bone they slope obliquely outward from above downward (Fig. 7, A, 1, and B, 1). The inner facet was narrow in front and broad posteriorly, exactly opposite to the normal condition (Fig. 7, A, and B, 3). Normally the external facet extends to the posterior extremity of the bone (Fig. 7, B, 2). In this specimen

FIG. 7.

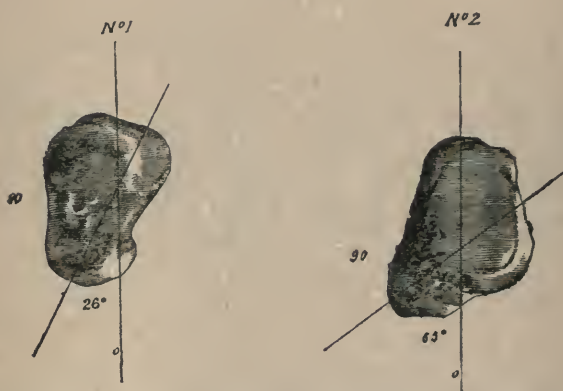


the thin posterior edge projects some distance beyond the facet (Fig. 7, A, 2). There was no constriction where the neck joins the body of the bone, as is the case normally. The external border of the neck was very much elongated, and was convex from before backward. The superior surface was also convex in the same direction. The neck was directed obliquely inward. A line drawn parallel with the long axis of the neck makes an acute angle with the antero-posterior diameter of the body of the bone. This angle in the left bone was fifty-five degrees (Fig. 8, No. 2). In the right bone the angle



was fifty-nine degrees. The significance of this extreme obliquity will be pointed out farther on. The heads of these two astragali differed slightly in the two bones. That on the right side was rounded, small, and entirely opposed by the scaphoid. In both bones this articulating surface extends around on to the inner border of the neck. This inner border is very short, hardly more than three lines in width (Fig. 7). The inner portion of this face also articulated with the scaphoid. In the left foot the head of the astragalus was more pointed,

FIG. 8.



Showing method of measuring the angle of the neck. No. 1 is a normal bone from the left foot of a child six months old; angle twenty-six degrees. No. 2 is the deformed bone from the left foot of a child aged five and one-half months. From photographs made by Dr. C. F. Poore, of New York City.

and presented two facets, the planes of which meet at an obtuse angle. The internal is the larger. It extended as far backward as the anterior border of the trochlea, and articulated with the displaced scaphoid. The other facet looked upward and outward, and is covered only by the astragalo-scaphoid ligament.

At the autopsy I was unable to obtain the spinal cord, but sections of the external and internal popliteal nerves were examined with the microscope, and nothing abnormal found. There was no change in the muscles to the naked eye, externally or on section, and under the microscope they presented

no differences from healthy muscular fibres. The tendons also were histologically normal in structure. The changes, then, in club-foot relate principally to the conformation of the ligaments and bones. The alterations in the ligaments are secondary to the bony deformity. The ligaments were short in certain situations and long in others, to correspond to their changed points of origin and insertion. The same may be said of the tendons, though in a less degree. The tendo Achilles is a possible exception to this rule. Its shortening of half an inch is important. This was partially compensated by its higher insertion. The tubular thickening, three-eighths to half an inch long, represented the new tissue which filled in the space left between the two portions of the tendon by the treatment after the tenotomy. After the operation the foot had been immediately flexed as much as possible by manual force, and held in this position for several weeks by means of the plaster of Paris splint. This accounts for the wide separation between the severed ends of the tendon.

In the following pages I have summed up the chief distortions discovered by this dissection :

The fascia on the inner side of the instep and palmar surface of the foot was tense and contracted.

The ligaments crossing the ankle-joint and those between the tarsal bones were considerably altered. They were all more or less thickened and generally shortened. This was most marked in those on the tibial side of the ankle and those crossing the scapho-astragaloid articulation.

The bone-changes were very striking. They were confined practically to the three posterior bones of the tarsus,—the calcaneum, the astragalus, and the os navicularis. The changes in the cuboid were too slight to be of any moment either in causation or treatment.

The os calcis was altered slightly in direction and considerably in shape. An increase of one-sixth its own length in so small a bone is important. This enlargement elongates the outer border of the foot. The curvature of the outer aspect of the bone adds to this, and thus accounts, partially at least, for the incurvation of the distal half of the foot. The corollary of this is that the calcaneum forms a powerful obstruc-

tion to the reduction of talipes varus. The deformity of the scaphoid was well marked. The thinning of its outer half, its increase from side to side of nearly one-third its width, its firm and close attachment to the inner malleolus, and its articulation on the inner side of the astragalus are important points to be considered in the treatment of these cases. The relations of the scaphoid bone to the tibia and astragalus explain to my mind many of the cases of failure after treatment in which the bad result was said to be due to the "inherent tendency to relapse."

The astragalus was greatly changed. A striking peculiarity was the increase in the width of the bone at the point where the neck arises from the body. This is the narrowest part in the normal bone (Fig. 7, A, 1, and B, 1). The body was very large and the trochlea broadened and increased. The neck arises from the body of the bone at a very oblique angle. To appreciate the amount of distortion in this obliquity it is necessary to know the normal relation of the neck to the body at this period of life. In astragali taken from fourteen undeformed feet in infants between the ages of four and one-half and six months there was found considerable variation in the measurement of this angle. The smallest angle was twenty-one degrees, the greatest thirty-eight, and the average was about thirty. Messrs. Parker and Shattuck in a similar series of examinations made a considerably larger angle. Mr. Adams, in his book on club-foot, finds no angle at all, but says that in the normal bone the neck looks directly forward. This obliquity of the neck in talipes varus, then, seems to be an exaggeration of the obliquity always present in undeformed astragali. Other differences from the normal in this bone are the changes in all the articulating surfaces, the elongation from before backward, the extreme thinness of its posterior extremity and the increased depth of the anterior portion thus allow the articular face of the leg-bones to approach closely to the os calcis behind and increase the amount of separation in front. This keeps the foot extended and is the cause of the equinus.

The presence of the rudimental bursal tissue on the dorsum of these feet I am unable to account for.



These observations of the anatomy of congenital equino-varus correspond almost entirely with the descriptions in the very valuable paper of Mr. Parker and Mr. Shattuck, published in 1884. There are only one or two points of difference worthy of mention. In both my specimens it was still impossible to flex the foot after removal of the muscles and tendons, even after division of the whole of the internal lateral ligament, without separating some of the articulating surfaces. In their dissections these gentlemen found that the foot could be rectified only after dividing the anterior fasciculus of this ligament. In neither of the feet which I examined was there any bursa between the scaphoid bone and the malleolus. Also they do not mention finding bursæ or bursal tissue in the situation over the dorsal surface of the foot as I have described.

They have not noted the firm ligamentous attachment between the scaphoid and inner malleolus, which seemed to me to be a strong obstruction to the rectification of the varus; they have also clearly shown that the obliquity of the neck of the astragalus is present in normal bones. It was noticed in my normal specimens that the greater the age of the specimens the less was the amount of the obliquity. This was almost invariably the rule. The material which these gentlemen had at hand for the study of the pathological anatomy of this deformity was so much more abundant than my own that I hesitate to make any positive deductions where our observations differ. As they are still pursuing their investigations, we can look forward with certainty to further knowledge on this important subject. From the dissections in my case the following conclusions are drawn:

1. The shape of congenital equino-varus is due primarily to bone-changes.

2. The varus is due to the elongation of the calcaneum, to the excurvation of its outer face, to the extreme obliquity of the neck of the astragalus, and to the distorted position and shape of the scaphoid.

3. The equinus is due to the great increase in the depth of the anterior portion, and to the thinness of the posterior extremity of the astragalus.

4. The deformed foot is also *retained* in its abnormal position by the alterations in the ligaments, tendons, and fascia, these alterations being secondary to the changes in the bones.

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## A CASE OF LIPOMATOSIS NEUROTICA (LIPOMATOSIS ATROPHIA MUSCULORUM).

BY ALLAN McLANE HAMILTON, M.D.,

Consulting Neurologist to the Hospital for Ruptured and Crippled, New York, etc.

WITHIN a few months I have seen a patient who is the victim of what I believe to be an unusual form of disease. This consists in the general subcutaneous deposition of fat in a manner which is pathological, the subject being an individual whose ordinary processes of nutrition are decidedly faulty; and while in some ways he presents an external appearance of health, he manifests in others a number of neurotic symptoms, and a facies which is common enough in certain degenerative glandular affections of early infancy.

The patient, S. D. C., was seen by me in consultation with Dr. Lewis H. Sayre. He is the son of Mormon parents, both of whom are alive and well. The family is a prominent one, its head being a consistent and conscientious believer in the doctrines of his sect, and has followed the scriptural injunction which has led to much multiplication in the second and third generations. With much difficulty I have ascertained that several instances of neuropathic transmission exist, —there being at least one idiotic child. Among the members of the immediate family of the patient I find that various minor peculiar trophic skin and hair defects exist, one little sister having one white and one black eyebrow.

S. D. C. was born March 29, 1879, and when I saw him in August, 1886, he was therefore about seven years and four months old. From the account given by the father, it appears that at birth he weighed thirteen pounds, was in perfect health until four years of age, when he contracted "whooping-cough, which turned into a low intermittent fever, the temperature



DR. ALLAN McLANE HAMILTON'S CASE OF LIPOMATOSIS NEUROTICA.





rising to one hundred and four for a short period, and no food passing his lips for eleven days." These are his father's words. His recovery was gradual, and was accompanied by a voracious appetite. He had not fully recovered in February, 1884, when it was noticed that his face looked thin, and there were strong lines around his mouth when he laughed, and the calves of his legs at the same time became plump and large for a boy of his years. This condition continued for some time, with extreme peevishness and irritability.

When I first saw the child his appearance was one that immediately suggested a rather well-developed case of pseudo-hypertrophic paralysis, for there was very great enlargement of his body, but especially of the buttocks, thighs, and legs, and a hardness which was most marked in the calves and posterior part of the thighs. His face alone seemed exempt from the process,—whatever it was,—and was pinched, of muddy color, and like that of a marasmatic child. His thin lips were drawn over his teeth, and his eyeballs were prominent. This contrast was so great as to lead me to believe the general bodily enlargement to be due to disease, and not to any healthy increase of fat. When he walked there was more or less waddling, but no very marked exaggeration of the dorsal curve. He arose from the ground or a chair with some effort, but was not obliged to help extension by placing his hands upon his thighs; his tendinous reflexes were evoked without much difficulty. The hips were mottled and the circulation defective, and he complained of subjective cold. He tired easily, and was indisposed to take exercise. Measurements taken by Dr. L. H. Sayre showed that his height was four feet; weight, seventy-two and a half pounds.

Circumference at level of nipple.....	28½ inches.
“ “ waist .....	26¼ “
“ “ hips.....	28½ “
“ right thigh, middle third.....	17¾ “
“ left thigh, middle third.....	14¾ “
“ right calf .....	12½ “
“ left calf.....	12½ “
“ left arm.....	7½ “
“ right arm.....	8½ “
“ left forearm.....	7¼ “
“ right forearm.....	7¼ “

Response to faradic current fair—no degenerative reaction. Though up to two years of age his control over his bladder was impaired, there is no difficulty at present, and no constipation. His sensibility is apparently unaffected, and no abnormality of any kind was discovered.

The increase of fat seems to have been constant, for, according to Dr. Joseph Richards, Jr., of Salt Lake City, the neck, which was before extremely thin, has become the seat of the deposition.

I saw the boy a second time, February 27, 1887, and found little, if any, change from my previous examination.

The muscles of thighs and legs were hard, and the posterior muscles of legs especially so. The knee-jerk in both legs was active, more especially so on the right side. The superficial reflexes were good, and tickling of the sole produced discomfort and speedy retraction. There was no ankle clonus; tactile sensibility was undiminished. The hand-grasp was weak, and he had also some appreciable weakness of the legs, which I tested in the ordinary way.

The circumference of head is twenty-one inches, the biaural arch is eleven and a half inches, and the antero-posterior diameter is twelve and three-quarters inches. The incisors are well developed, but the canines, bicuspid, and molars are irregular and small. The tongue is large, thick, and broad, such as it often is in idiots. There are no ocular symptoms.

Electrical examination of the muscles of the face showed that they presented the reaction of degeneration, and that the anodal stimulus was the stronger. The muscles of the body generally reacted feebly to strong faradic currents, but quite readily to a galvanic current of six milliamperes, with cathodal closure.

Intellectually, the boy presented a curious state of irritability and timidity. In some ways he was precocious, in others far behind other children of his own age. He was filled with a restless spirit of mischief, almost monkey-like in its nature, which led him to handle and destroy anything he might lay his hands upon. He was constantly warring with his parents, and got into ungovernable rages, which were undoubtedly precipitated by indulgence.



I find no exact analogue of the case of S. D. C. in the literature of neurology. Duchenne called attention to certain subcutaneous depositions of fat in cases of atrophic muscular disease which were likely to be mistaken for true muscular substitution, or "pseudo-hypertrophic paralysis." In these cases the muscular atrophy was almost general, without being extensive, so far as the intrinsic morbid process was concerned. Landouzy,\* Pitoux,† Vergnes,‡ and others speak of an enlargement that may occur in connection with certain deuteropathic conditions. The former publishes a case of hemiplegia with great fatty deposits. Pitoux and this author both called attention to the subcutaneous deposit of fat in old cases of sciatica and neuritis, and Landouzy publishes a case of cervical pachymeningitis with neuritis of the brachial plexus, and atrophy of the muscles of one arm, with a phenomenal increase in size due to fatty deposit.

In this case we find an initial febrile stage which is so often met with as a precursor of many infantile diseases of a trophic nature, notably in poliomyelitis acuta, followed by a rapid accumulation of surface-fat and a degeneration of limited groups of muscles. In this boy there is retained knee-jerk, which is not the case in pseudo-hypertrophic paralysis, no loss of extensor power, and no lordosis. What the future may reveal it is impossible to say. If the same change in the fatty deposition takes place as it has in the face, we may find degeneration of the muscles of the trunk and extremities, or other forms of trophic degeneration.

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\* De l'Adiposé du Tissu conjunctif sous-cutané des Membres atteints d'Atrophie musculaire deuteropathique: *Revue Mensuelle*, etc., 1878, vol. ii.

† Thèse de Paris, 1876.

‡ Thèse de Paris, 1878.

## FERMENTED MILK.

BY E. F. BRUSH, M.D.,

Mount Vernon, N. Y.

FROM the most ancient times milk has been esteemed as of great value for human food. Among the more civilized races of mankind this article has been used fresh, and manufactured into butter and cheese, but among the uncivilized and semi-civilized races the latter preparations are little known, and the milk of their animals is principally used after it has undergone various forms of fermentation. Thus the Scythians, Tartars, the nomadic tribes of the Russian steppes and Western Siberia, transform their milk into kumyss. The Arabians use a fermented milk called *leban*, the Turks also ferment their milk and call it *yaourt*, while some of the other Oriental tribes designate their fermented milk as *keschk*, *karagart*, and *jourt*. In some parts of Asia, where the natives like to season their drink with red pepper, they relieve the burning of the mouth by drinking milk that has undergone a spontaneous lactic fermentation,—that is, common sour milk. This variety of milk is now being sold in New York as one of the fermented milk foods. The Caucasian mountaineers ferment their milk and call it *kephir*. This beverage attracted the attention of the medical men on the Continent because in some respects it resembled kumyss. Professor Struve was, I think, the first to call attention to it, but, according to this authority, its preparation was surrounded with mystery, and the ferment used could only be obtained from the mountaineers. The ferment was called kephir grains. P. Kern seems to have been the first to procure these grains from the Caucasians, and described them in 1882 in the *Bot. Ztg.* and in the Bulletin of the Moscow Imperial Natural Society; he called these granular masses *dispora Caucasica*. Because of the mystery surrounding this ferment and the manner in which it was presented to the

public, the beverage formed by its action attracted considerable attention in Russia and Germany. Such men as Hueppe, De Bary, and others took up the subject, and it became quite popular. Still, the source from which the Caucasian mountaineers obtained their ferment remained a mystery; nevertheless, like many other medical profundities, these kephir grains suddenly became an article of commerce, and the market was well supplied at a high rate. When this Continental beverage was at the height of its popularity, I procured half an ounce of the grains at a price of one dollar and a half. After extended experiments with the ferment, I reached the conclusion that it was very weak in its vinous action, as a larger amount of the milk-sugar was changed into lactic acid (and this change is what takes place spontaneously in milk when no agent is added), and the amount of alcohol obtained by the kephir was very small, being in all cases less than one per cent. It is a well-known fact that in conducting the process of alcoholic fermentation, the more we complete the vinous destruction of sugar the more completely do we guard against the other and more dangerous changes that take place in nitrogenized foods.

Now let us see what this kephir ferment is. Professor A. de Bary, of the University of Strassburg, says, "The hay-bacillus-scum is properly zooglœa, with a special characteristic form; formations, more or less like it, are found often enough in fluids containing decomposable organic bodies; highly characteristic zooglœa developed in a fluid are the frog spawn, bacterium of the sugar-factories and bacterium of kephir." Thus we see that kephir is largely a zooglœa, very much like the mother of vinegar and such like diseased masses of fermentative bodies. De Bary further says, "The kephir grains are in their first living state white bodies, usually of an irregular roundish form, equal to or exceeding a walnut in size, chiefly composed of rod-shaped bacteria and numerous groups of sprouting fungi, living and growing in common with the bacteria." Crookshank, in his "Manual of Bacteriology," describes the kephir ferment as *bacillus Caucasicus*, "rods forming two spores, one at each end, otherwise similar to *bacillus subtilis*; they occur in the form of whitish lumps, in company



with *saccharomyces mycoderma*." Thus it will be seen that in these kephir grains we have a mass of micro-organisms procured from the dirty skin-sacks of an uncivilized race of dirty people. In this age of bacteriology, in which we are able to separate and cultivate any of the germs we wish to produce a desired effect, it seems strange that we should go to an uncivilized race and procure the accumulating mass of diseased germs that has been gathering for years in their dirty skin milk-sacks. And this simply because some one proclaimed the derivation of the ferment a mystery.

But the strangest part of this kephir craze in Continental Europe was the discovery by Alexander Levy, in 1886, that effervescing alcoholic *kephir* can be procured without any kephir grains whatever, by simply bottling the milk and shaking it with sufficient violence while it is turning sour. This form of fermented milk gives nearly double the percentage of alcohol that is obtained from milk to which the kephir grains had been added. Thus we see that the addition of these masses of zoogloea rather retards than accelerates the change we wish to produce. Professor De Bary, who had devoted a good deal of attention to kephir, describing the process with minuteness, after he had verified, with the assistance of Professor Schmiedeberg, the correctness of Levy's discovery, says, "Our former explanation must therefore be abandoned, and there is no other at present ready to take its place. *But the case is full of instruction for our warning.*"

Since the pricking of this Caucasian milk-bag in Continental Europe, thus destroying the market for the sale of kephir grains, the French and German kephir manufacturing companies are establishing themselves here, and using the old and exploded medical testimonies to develop the business which had exhausted itself in their own land.

Professor Taylor, of Cincinnati, in the May number of the ARCHIVES OF PEDIATRICS, makes some statements in his article on "Kephir, and its Use as an Infant Food" which I wish to question. I do not, for an instant, doubt the correctness of his observations of cases, but it is a well-known fact in all hospital experience that in the trial of all new preparations, no matter what the ultimate result may be, the patients

seem to get better, and the explanation of this phenomenon, plain enough to many a hospital interne, is that while patients are under observation for the trial of new treatment, the care and attention given them is always much greater than that bestowed on patients undergoing a routine method of treatment. We can all remember articles that raised our hopes from the glowing accounts collected at the hospitals, and that were finally abandoned as useless. But the professor's statement that "the presence of lactic acid has a germicidal action upon a large class of micro-organisms, and thus acts as a purifier of the milk," is decidedly wrong. The large class of micro-organisms which he adds in his kephir ferment certainly do not seem to be affected. Lactic acid in milk is not a purifier, it is simply a forerunner of putrefaction. In his description of the putrefactive process in "animal alkaloids," Brown says in his book, "The mass-residue exhibits a progressive rôle of fermentation; at first the *lactic*, then the butyric, and so on, giving the finishing characteristics of the putrefactive condition." This is simply what takes place in milk exposed to the air; the lactic fermentation first and then the butyric; until these have completed their rôle, bacteria termo and the other micro-organisms that appear to produce putrefactive changes cannot act. Therefore lactic acid is not a purifier, but a dangerous body in nitrogenized foods. It is simply lactic-acid fermentation that has taken place in certain articles of food, and the putrefactive germs first commencing their life that produce the violent attacks of choleraic diarrhœa that seize persons who have eaten food that has turned sour. Such a careless statement as this of Professor Taylor should not, I think, be allowed to pass unchallenged. Lactic acid in food must always be looked upon as a dangerous body; it is a far different substance when used medicinally in its free state than it is in combination with nitrogenous bodies undergoing fermentative changes that result in the dangerous alkaloids produced by putrefactive ferments.

Professor Taylor seems to know as little about kumyss as he does about kephir. One might infer from his expressions that the only genuine kumyss is that made in the skin-bags of the Bashkirs in their old traditional way, and that all other

kumyss, no matter how much intelligence is displayed in its manufacture, is in disrepute; while, on the other hand, kephir can be made without any intelligence by any one who possesses the ferment without knowing whence the ferment is derived or what action is set up by this mass. When one prepares kumyss intelligently one knows exactly what fermentative changes are to be produced, and can, therefore, select the proper ferment for the purpose. But this, according to the professor, does not possess the virtues of a genuine article, while a mass of diseased fermentative germs with a variety of bacteria and fungi, of which no man knows which will predominate, this makes genuine kephir.

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## VARICELLA.

BY NORMAN TEAL, M.D.,

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THE fact that varicella is sometimes confounded with variola is sufficient to demand a brief discussion of this otherwise unimportant disease.

Varicella has received many different appellations, such as false variola, pointed-pox, windpox, chicken-pox, etc., all having reference to a resemblance to smallpox. It is now usually called varicella by the profession, while others use the name of chicken-pox, and thus, in some degree, keep alive the dangerous notion of kinship between this and its nominal cousin.

The disease was known in old times, but, on account of its mild character, was not much regarded until the inoculation of variola became public. Then it was that the opposers of this cited cases of varicella in those inoculated as proof that protection against natural smallpox had not been afforded, while the supporters of this practice, equally untaught as to the true nature of varicella, regarded it as variola modified by previous inoculation.

This confusion seems to have become even greater after the practice of vaccination was introduced, from the frequent oc-



currence of varioloid in those not completely protected by the vaccine results.

In 1767, Heberdene insisted upon a distinction between variola and varicella, for which he was stoutly opposed, if not really abused. And about that date general attention was attracted to varicella, not on account of its individual importance, but by reason of its resemblance to and liability to be mistaken for variola, or, more particularly, modified forms of the latter. A little later, while such men as Heim, in Germany, maintained the individuality of varicella, and Thomson, in England, advocated its identity with variola, the medical profession, always alert, and generally quick of comprehension, grasped the truth, and without formal declaration for or against either theory, almost unanimously adopted the tenets of Heim and his class. The English, however, following Thomson's active advocacy of the identity of variola and varicella, continued their opposition to vaccination upon the mistaken notion that cases of varicella occurring in vaccinated persons were modified smallpox or varioloid.

That such differences and confusion should arise in the past is not at all singular, when we take into account the fact that pathological exactness was not until a comparatively recent period a professional virtue, if not quite a necessity.

If the older physicians had observed the two diseases, variola and varicella, as pathologists now look at their subjects, the separate individuality of the latter would long since have been recognized by all.

It is not here maintained that the distinction between variola and varicella is not generally made and accepted, but that notwithstanding the differences between the two diseases are freely acknowledged by the profession in general, there remain notions of kinship between the two, as before intimated.

Varicella is to be distinguished from variola and modified forms of the latter by observance of many differential symptoms, among which are the following: Varicella is seldom preceded by fever, and, in the exceptionally rare cases, attended by increase of heat, this state lasts but a few hours, while high fever of several days' duration marks the initiatory stages of smallpox.

The true vesicle of varicella is clear, round, and smooth, superficial, discreet, somewhat compressible, paler than the surrounding parts, quiet, and painless to the touch; while the pustule of variola is opaque, knotty, and hard in its earlier stages, deep-seated as compared with varicellous points, confluent or converging, quite solid, darker than surrounding parts, and often slightly throbbing and painful to the touch. The characteristic contents of the vesicle differ with the contents of the pustule about as does serum with pus. The vesicle and pustule compare, pathologically, as a blister to a boil. In fact, the literal significance of the two words very nearly, if not quite, differentiate the two diseases in question. Another point of marked difference may be observed before eruption takes place. In variola a hard, shot-like body may be felt under the skin, even before the pustular elevation shows in the least, while in varicella no such discovery can be made. The writer, while in military service, on several occasions, in the dark of night, diagnosed smallpox by simply passing his hand over the faces and foreheads of his patients, thus detecting the hard, very hard, shot-like bodies so characteristic of the disease in its ante-eruptive stage.

During the desiccating period of the varicellous vesicles there may be found indented elevations not unlike umbilicated pustules; but careful study will serve to allay all doubts as to whether the point in question marks the site of a former vesicle, or shows a declining pustule. For instance, a careful examination will detect a nodular formation on the site of the variolous eruption, but none such at the basis of the varicellous vesicle.

These are a few of the many salient and differential points in varicella and variola, arrayed with a view of bringing the subjects as fully in contrast as are their characteristic features.

Varicella is usually found among children, but may affect adults. The author saw a young man in his twenties who had a small crop of varicellous vesicles, principally upon the forehead. A few of these were drying up and indented upon their tops, in this latter particular appearing not unlike umbilicated pustules. The case was clear of all doubts, however, and was readily diagnosed as varicella, mainly upon the fol-

lowing grounds: The young man had a short time before the appearance of the eruption been among a family of young nephews and nieces while the latter had the disease. There were remaining upon his face, forehead, and neck a few round, smooth, and shining vesicles of a whitish color. Several shallow scars marked the sites of recently-disappeared vesicles, as the patient himself testified. And, above all, he had not had any premonitory fever, nor been in any way discomfited, barring the slight irritation from the vesicles, and the concern he had felt lest he might have varioloid, or, at least, be suspected as a pestilential subject.

He had been successfully vaccinated about a year prior to this attack of varicella. His nephews and nieces, referred to above, had also been vaccinated shortly before varicella affected them.

These cases, as well as others I have seen, bear strong, in fact, almost positive testimony that vaccination affords no protection whatever against varicella. Granting, then, that varicella is not prevented by vaccination, while variola is prevented thereby, the conclusion must follow that the two diseases are widely different, having no characteristics in common beyond the similarity in form between the vesicle of the one and the pustule of the other.

The disease is decidedly contagious, but not so readily communicated as variola, depending mainly, if not solely, upon breath contact for its spread. It seldom attacks adults, and affects the same individual but once. A few cases of repeated attacks have been reported, however, but proof of anything more than mere successions of vesicular crops in the given cases is wanting. The writer has seen a child suffering from varicelous eruptions at three different dates within about ten weeks.

There are no dangerous tendencies in varicella, and since it cannot be aborted, treatment is uncalled for, excepting in possible complications.

It is, therefore, as intimated in the first paragraph of this article, an unimportant disease, excepting that its several appellations and conditions are suggestive in some degree of relationship with variola.



## Current Literature.

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### I.—HYGIENE AND THERAPEUTICS.

Dixon: Arrest of Evolution versus Maternal Impressions. (*Weekly Medical Review*, February 11, 1888.)

The writer is of the opinion that the evidence brought forward to support the theory, that "mental impressions upon the mother are conveyed to the fœtus in utero through the medium of the blood, and are the cause of monstrosities, amputations, nævi, etc.," is far from conclusive. He believes that demonstrated pathological, physiological, and embryological truth shows that these so-called maternal impressions, monstrosities, marks, etc., are the results of arrest of development or evolution, pressure by amniotic bands, pressure by the umbilical cord, adhesion of the placenta, or by some pathological condition of the fœtus or its membranes, or by heredity.

The author gives a most interesting review of the evolution of the embryo, discussing the various points at issue, and draws the following inferences:

*a.* That during the embryonic existence certain parts may be hindered or arrested in their development, while the other organs not directly connected with them may continue their evolution and become fully developed.

*b.* That ectopia viscera of the abdomen, spina bifida, cleft palate, harelip, webbed fingers and toes, etc., are only evidence of arrested development of embryonic abdominal, spinal, and maxillary processes, or, in the case of webbed extremities, the continuation of the embryonic hand or foot of the second month.

*c.* That any agency causing arrest of development of any portion of the fœtus must necessarily operate prior to the evolution of the part.

*d.* That the cause of the arrested development may be local or general, as injuries to the mother's abdomen, diseases of the uterus or its membranes, hereditary transmission of deformity.

*e.* That excessive development of parts of the fœtus may obtain, resulting in nævi, aneurisms by anastomosis, supernumerary fingers and toes, etc.

*f.* That intra-uterine amputations are the results of amniotic bands, placental adhesions, fracture, or from constriction by a loop of the umbilical cord.

*g.* That amniotic bands or placental adhesions result from

inflammation of the uterus, its decidua, or inflammatory diseases of the fœtus.

*h.* That the false membranes causing these amputations may be afterwards absorbed, as also the amputated extremity.

*i.* That so-called double monsters are the result of the development of a double cicatricula on the blastodermic membrane of a single ovum.

*j.* That twins with a common chorion also result from the development of a double cicatricula on the blastodermic membrane of a single ovum.

*k.* That in either case there is always unity of sex.

*l.* That the nearness of the primitive traces to each other determines whether the impregnation will result in separate twins or a double monster.

*m.* That in twins with single chorion or anastomosis of placental vessels, one fœtus may become perfectly formed while the other becomes monstrous.

*n.* That the development of the abnormality in such cases depends on local anatomical causes, and is governed by definite laws.

*o.* That every known form of malformation in the human race has its analogue in the lower animals, birds, fishes, and reptiles.

*p.* That arrest of development at any of the stages of embryonic life results, in part or in whole, in a permanent embryo of the stage at which the arrest took place.

From the consideration of all these facts, the subject is narrowed down to the following questions,—viz.:

Can the mother's mind produce the diseases of the uterus or its membranes which result in false bands or placental adhesions which cause amputations and other deformities?

Can such impressions cause the umbilical cord to encircle and amputate a limb, or cause the death of the fœtus?

Can such impressions reach and act upon the newly-impregnated ovum so as to cause the double cicatricula to approach each other so closely as to result in union and double monsters?

Is it possible for maternal influence to destroy or deform one fœtus in utero, while another enclosed in the same membranes is uninjured?

A large percentage of congenital deformities being shown to arise from local and other causes which can have no connection with maternal influence, is it probable that at another time exactly the same deformity is produced by maternal impressions?

Is it reasonable that an intra-uterine amputation will be

caused in one case by an amniotic band, while in another it may be caused by maternal impressions?

When it is remembered that no nervous connection exists between the embryo and the mother, that there is no distinct blood communication, that the mother's mind can have no influence in causing pathological conditions which have been shown to be the cause of the malformation, that during the first week of foetal life the ovum is surrounded by anatomical conditions precluding maternal influence, whereas it has been shown that the vast majority of malformations have their origin in that period of embryonic life in which the ovum is still homogeneous blastema; when all these facts are considered, can any one believe that the mother's mind can change the conformation of the foetus in utero?

Woodhead: Milk and Disease. (*Lancet*, March 10, 1888.)

Milk is a typical food, and contains all the elements necessary for the growth not only of tissues and higher organisms, but of micro-organisms as well.

Various forms of fermentation and other changes were brought about by the growth and development of the different forms of micro-organism—viz.: lactic acid fermentation, butyric fermentation, alcoholic (kumyss), and ropy fermentations.

Changes in color are sometimes induced, as in blue milk and red milk.

Pathogenic organisms find in milk an excellent medium for growth; in this way may be spread diphtheria, scarlatina, typhoid fever, summer diarrhoea, tuberculosis, anthrax, etc.

Milk is the one food which is not cooked as a rule, and when cooked at all, usually but imperfectly.

Tuberculosis in children frequently begins in the alimentary tract, and the glands associated with that area; in such cases it is probable that the virus has been introduced with milk food.

The experiments of Koch and Bang have shown that milk from tuberculous cows is capable of producing tuberculosis in animals inoculated or fed with it. The same result always followed if the udder of the cow affected was tuberculous.

The writer had found tubercle-bacilli in six of nearly six hundred samples of milk which were examined.

Although it is true that tuberculosis is a common disease among cattle, the udders are affected in only a small percentage of the cases; but when they are, the milk is a source of great danger.

The necessity of more rigid and thorough official inspection of dairies and cattle farms was urged by the writer.



Is Chloroform a safe Anæsthetic for Children? (*Lancet* [editorial], April 14, 1888.)

Recently in one of the large London hospitals an infant, five months old, died from the effects of chloroform administered for the removal of a nævus. The operation had been completed before death occurred.

The coroner's inquest elicited the fact that "children rarely die from chloroform; that they take it readily and easily recover."

The editorial in the *Lancet* takes the position that the ill-fed, poorly-nourished children who come to our hospitals are not favorable subjects for chloroform administration, and that the current belief that the young rarely die from this cause is erroneous. It is much safer, when children are too small to render the use of nitrous oxide and ether advisable, to employ some such combination as the A. C. E. mixture.

Braddon: Oil of Peppermint as an Antiseptic in Diphtheria and Phthisis. (*Lancet*, March 17 and 24, 1888.)

Although Koch in 1881 had found, in his researches upon chorbon-bacillus, that oil of peppermint (1 in 300,000) arrested the development of spores, and that the vapor very quickly killed both spores and bacilli, this operation seems to have attracted but little attention to the antiseptic properties of this drug.

A considerable number of experiments are quoted showing the value of this antiseptic. One of the most striking was as follows: A piece of meat was wrapped in several layers of sublimate gauze (1 in 1000), another in carbolic gauze (1 in 40), a third in peppermint gauze (1 in 1000). That wrapped in the sublimate gauze became putrid in the second week, that in the carbolic gauze in the third week, while the peppermint gauze seemed quite impregnable, the meat being quite sweet at the end of several months.

The advantages claimed for the peppermint are, that it can be used in any strength and in any quantity without danger; it is readily diffusible, but does not exhaust itself easily; the gauze having retained the odor at the end of nine months as freshly as when prepared.

A small number of surgical operations are reported in which it was the only antiseptic used, and two severe cases of diphtheria, which were treated locally by the application of the pure oil copiously applied twice daily, with apparently decided benefit. The well-known use of peppermint as a carminative is probably due, to some degree at least, to its antiseptic power.

Upon lower forms of animal life its vapor is toxic, thus

cockroaches and other insects are readily killed; 1 part in 100,000 killing them in about an hour, with convulsions, ending with paralysis.

Bates says, "One drop placed under a bell-jar covering a culture of cholera-bacilli will kill both bacilli and spores in forty-eight hours." The author admits his experiments are very incomplete, and he has not attempted to show the place of peppermint in the scale of antiseptics. He has, however, shown very clearly that this substance has high power, and possesses the great advantage of not being toxic.

**Treatment of Diphtheria with the Bichloride of Iron and Milk.** (*Le Concours Méd.* [editorial], April 14, 1888.)

Mohammed ben Nekkach recommends for the treatment of diphtheria a teaspoonful, every five minutes, of a solution containing twenty-five to thirty drops of perchloride of iron, and a teaspoonful of milk to a glass of water. Emetics are also to be given occasionally, and the false membranes touched three times daily with a strong solution of perchloride of iron. With this treatment he states that he cured twenty out of twenty-one cases of diphtheria. In all of the cases treatment was begun before asphyxia and intoxication appeared. The patient who died was only six months old. Six other cases terminated fatally because the treatment was commenced too late or was not carefully followed. The comment upon the foregoing is that perchloride of iron has long been used in the treatment of diphtheria, both externally and internally. Guelpa has recently published a paper favoring its use, in the form of abundant and frequent irrigations, as the best means of preventing the extension of the false membranes and auto-infection.

A. F. C.

**Escherich: Contribution to the Etiological Method of Treatment of Gastric Diseases in Infants.** (*Arch. f. Kinderh.* [abstracted], ix. 3.)

The method which Epstein proposed of washing out the stomach has been simplified by the author in respect to the apparatus which he uses. He also recommends for irrigation purposes one-half per cent. solutions of resorcin or three per cent. solutions of benzoate of soda. His best results were obtained in cases of simple gastric dyspepsia with fermentation; less satisfactory results attended the treatment of gastro-intestinal diseases, while the results in cholera infantum were least satisfactory. Treatment by irrigation of the intestine was less successful than that of the stomach, and of three hundred and seventy-seven children who were treated by that

method, two hundred and fifty-nine recovered, fifty-five were not improved, and sixty-three died. Since the small intestine is not entirely accessible to antiseptic mechanical treatment, the author sought to limit the processes of fermentation in this portion of the intestinal tract by the removal of fermentescible substances from the diet. Since fermentation of the carbo-hydrates is most likely to take place in the upper portions of the intestine, while albuminoid bodies are unaffected by this process in those localities, a rational inference would be that the rigorous use of an albuminous diet would be the most effective means of preventing fermentation and the symptoms which proceed from it. Such a diet may consist of albumen-water, meat soups, beef-tea, and even raw meat. The use of peptones will be found very satisfactory. The unfavorable elements which are introduced into the intestine and cause fermentation should also be limited by the use of foods containing dextrene.

A. F. C.

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## II.—MEDICINE.

Oertel on Diphtheria. (*Lancet*, February 25, March 3, and March 17 and 31, 1888.)

I. *Pathogenesis*.—The author admits that the nature of diphtheria is by no means as yet fully explained. That its phenomena can be attributed to the implantation of a specific microbe upon mucous membranes, and the absorption of ptomaines generated by its growth, although plausible, lacks the basis of support which agreement among bacteriologists as to the identity of the microbe would give it.

Oertel was one of the first, more than twenty years ago, to suggest the bacteriological origin of the disease.

No light is thrown upon the disease diphtheria by dwelling upon the distinctive types of croupous and diphtheritic inflammation; since both forms are found in the same disease, their character depending upon local conditions and not upon the specific poison.

Wagner attributed the false membrane to a fibrinous metamorphosis of epithelial cells, excluding necrosis and inflammatory exudation from the process occurring in epidemic diphtheria.

Oertel, with Recklinghausen and others, do not agree with Wagner in excluding fibrinous exudation from a share in the false membrane. They describe the cellular transformation as hyaline.

Still later, Cohnheim has defined the changes as belonging to the class of coagulation-necrosis.



These doctrines, while explaining the formation of the false membrane, also led to the idea of antecedent changes before the membrane was formed, thereby supporting the view of general infection as distinguished from that of a primarily local disease.

Buhl described the process as involving the whole mucosa, necrosis being preceded by cell proliferation, termed "diphtherial infiltration."

The next step of advance was Oertel's discovery of a micrococcus in the tissues and false membrane, and described the disease as localized primarily in the pharynx.

Bizzozero pointed out that the lymphoid tissues were specially affected,—the intestinal follicles, the spleen, mesenteric glands,—and he drew the conclusion that a process initiated in the lymphatic tissues of the tonsil was prone to extend to other similar tissues. This was supported by clinical facts.

The "hyaline degeneration" of Recklinghausen is known to occur in the walls of vessels in many infectious diseases, and strictly is one of the "coagulation-necrosis" changes of Cohnheim.

Many other pathologists have made valuable contributions to the histology of the changes from diphtheria, which have been of value in explaining clinical symptoms without throwing much light on pathogeny.

The results of bacteriology are thus far too contradictory to be of much value, as the inquiry has been mainly directed to the possibility of inducing the disease in animals by inoculation.

False membranes are not, however, the sole distinctive lesions of diphtheria. Because they are produced in animals is no sufficient proof that the disease is transmitted. The whole disease, not merely one of its manifestations, must be considered. We should seek to study the disease from its pathological side before venturing to draw conclusions from bacteriology.

II. *Lesions.*—The changes described are largely those which effect the intimate structure of cells and their nuclei. The behavior of cells under the influence of agencies which alter or annul normal processes of nutrition can be fully studied only in the changes which their nuclei undergo.

Particular stress is laid upon these changes in diphtheria, and in this respect Oertel has made a notable advance in our knowledge of this subject.

Examinations made of cases only which were uncomplicated were included, and of these those dying when the disease was at its height. Thirty-one cases were minutely studied.

The following is a summary of changes found in the principal organs:

1. *Epiglottis*.—This was selected because it often affords an opportunity of studying the very earliest changes of diphtheria. They consist in a marked proliferation of the epithelial layers, and their infiltration with leucocytes; this is associated with degenerations of the cells, so that nuclear fragments form in granular masses, which come to constitute areas of necrobiosis in which eventually a hyaline net-work is formed. The infiltration of leucocytes extends down deeply into the substance of the mucous membrane, and the same tendency to degeneration and necrobiosis is to be seen here. The epithelium becomes detached in places, and the false membrane is formed of the granular relics of necrobiotic epithelial cells and leucocytes, together with fibrinous exudation from the blood-vessels. The mesh-work that forms its basis is due to the coagulation of this lymph, as well as the granular matter or detritus of cells which have undergone conversion into coagulable material. Leucocytes and bacteria are entangled in its meshes.

2. *Tonsil*.—Here mostly there is a thick layer of false membrane, and the changes of the parenchyma of the tonsil are proportionate to the extent of the surface lesion.

The false membrane consists of fibrillar net-work enclosing masses of epithelium and leucocytes, the net-work being coarser the longer the exudation has lasted. In the tonsil itself there is hyperplasia of the follicles,—adenoid tissue and septa,—which is not diffuse, but in scattered areas. The follicles are filled with cells which undergo necrobiosis, as evidenced by the breaking up of their nuclei. The nuclear juice is altered so that it becomes capable of being stained by reagents, while the chromation of the nucleus breaks up, and the final result is the formation of masses of various shapes and sizes, which stain deeply. These nuclear changes are accompanied by the breaking up of the cell protoplasm. This detritus undergoes further degeneration, forming a coagulable material, which converts the follicle into a fine hyaline net-work, staining yellow with picro-carmin, and entangles leucocytes and granules in its meshes.

In older cases a like change occurs in the adenoid and connective tissues, so that it is difficult to determine the limit of the false membrane with which this degenerated tissue blends.

The *vessels* of the tonsil present more or less hyaline thickening of their walls, which, if the intima be mainly involved, may cause total occlusion of the vessel. Some hyaline degeneration may also be found in the muscular fibres of the

peritonsillar tissues and even infiltration with leucocytes of the intermuscular connective tissue.

3. *Pharyngeal mucous membrane and uvula.*—These parts are more or less coated with false membrane, and the early stage of the process can rarely be studied under the microscope. The lower limit of the false membrane it is not easy to define, but its upper layers are crowded with micro-organisms, and the whole is filled with broken-down leucocytes and other cells.

In the mucosa itself, the layers nearest the false membrane show hyaline conversion of connective-tissue fibres and marked changes in the cells. The nuclei of connective-tissue cells are greatly altered with the separation of the chromatin and conversion of the nuclear juice. These may be found in cells retaining their normal position. The deeper layers of the mucosa are filled with leucocytes.

The *uvula* may be swollen and oedematous and wholly covered by false membrane. In such cases the whole substance shows necrobiosis of cells and nuclei. Even the cells of the arterial adventitia and the perivascular connective tissue exhibit the total disintegration of nuclei characteristic of necrobiosis. Hyaline degeneration follows necrobiosis. Nowhere were such marked vascular changes found as in the *uvula*. Yet the specimens examined showed no such change in the *azygos uvula* muscle.

4. *Lungs.*—The lesions found here were referable to the action of an inflammatory infective process and mechanical obstruction of the air-passages. There were scattered subpleural hemorrhages, these sometimes extending between and compressing the alveoli. Leucocytes infiltrated the alveolar septa, and in later stages invaded the alveoli, the epithelium of which became detached, giving the characters of catarrhal pneumonia, while in other alveoli there was more fibrinous exudation.

In one very severe case of diphtheria the alveolar contents were composed of nuclei, which exhibited disintegrating changes somewhat like those seen in necrobiosis. However, these pulmonary lesions bear no specific character, and on none other than might occur from inflammatory stimuli of varying intensity. The special and direct effects of a poison upon the cells—*i.e.*, necrobiosis and chemical change or degeneration—were not seen in the pneumonic areas.

*Lymphatic glands.*—Enlargement of cervical and submaxillary glands is one of the most constant clinical features of diphtheria. These glands show numerous hemorrhages in periglandular tissue and in capsule, and marked hyperplasia of the cells of the gland. Scattered necrobiotic foci, staining



faintly, can be seen throughout the gland, as a rule extending into the follicles, and more in the cortical than the medullary portion of the gland. There are also numbers of large round epithelioid cells with disintegrating nuclei; similar changes being seen also in the lymphoid corpuscles, the latter are doubtless infected at a later period than the epithelioid cells, and from them. In advanced stages these foci form granular masses, which cannot be stained, but undergo the further coagulation and necrosis noted elsewhere.

These foci, when limited, are bounded by layers of normal lymph-corpuscles, but when the necrobiosis is extending, products of degeneration and disintegrating nuclei are found between normal cells.

Bronchial glands show also hyperplasia and hemorrhages, but fewer foci of necrobiosis, and these mostly in the follicles.

The lymph-channels may contain no normal corpuscles, but only cells with disintegrated nuclei and the products of this (chromatin and juice); the changes may extend from these channels into the medullary substance, so that while in the cervical glands the necrobiosis is widely diffused, in the bronchial it is mainly restricted to the follicle,—this depending upon the extent of the disease in the mucous membranes from which the lymph-vessels come.

*Heart and blood-vessels.*—This is mostly affected late, often after the disease has passed away from the mucous membrane. In only two of eleven cases fatal during the height of the process in the mucous membranes were lesions observed in the heart. Hemorrhages, subpericardial and more rarely subendocardial, are found, probably from changes in the vessel-walls by the poison. Masses of leucocytes are seen beneath the endo- and pericardium or between muscle-fibres, the nuclei in many places showing degeneration, but not forming necrobiotic foci. Muscle nuclei are increased in size and number, show segmentation and apparent increase of chromatin, but no complete karyokinesis, the process of nuclear division being arrested in its first stage and then passing into degeneration.

These nuclear changes precede the greater lesions, occurring in cases of heart-failure late in the disease, and are found mostly in the fibres just beneath the endocardium or those about the coronary arteries. In this early stage the muscle-fibres are nearly normal. In the arterial coats we find nuclei of muscle-elements increased in size, and slight proliferation and desquamation of endothelia, with round-celled infiltration of the adventitia.

*Stomach and intestines.*—Occasionally diphtheritic deposits may be seen in the stomach, but they are secondary to those

in the œsophagus; this is an accidental complication. The important changes are in the lymphatic tissue of the gastro-intestinal tract,—the intestinal follicles, agaminate glands, and mesenteric glands. In these cases necrobiosis in Peyer's patches was met with. None of these changes were so advanced as in the glands connected with the respiratory mucous membrane. The epithelium for the most part was normal; but no specific bacteria could be demonstrated among the many that existed.

The mesenteric glands were swollen and hyperplastic, in some cases where no special changes in the intestine were visible, the appearance being probably an earlier stage of the same process going on in the cervical glands.

The conclusion drawn is that the gastro-intestinal tract is seldom involved in the essential process of diphtheria, the changes formed being secondary and not in proportion to the severity of the attack.

*Spleen.*—The changes varied with the severity of the case and the development of the organ,—i.e., the age of the patient. It was more or less swollen; its capsule tense and the seat of hemorrhages; the pulp soft and bulging towards the cut surface of the capsule; and the follicles large and prominent. In the pulp, hemorrhages and hæmatoidin masses could be seen, and all vessels distended with blood. The splenic corpuscles were increased in number, especially about the bifurcations of the arteries. The follicles were surrounded by a wide zone of cells,—lymphoid corpuscles, leucocytes, and larger round cells. Nuclear changes of two kinds were visible in these cells,—direct segmentation with the ordinary changes of cell division in the chromatin and juice, and indirect fragmentation where the chromatin is broken up into small masses and the nuclear juice becomes capable of being stained. In this way deeply-stained bodies in great variety of form were produced, but not the disintegrated fragments which belong to necrobiosis.

In the Malpighian follicles there is either the formation of numerous epithelioid cells, or of large round cells, which stain better, but yet not so well as do the leucocytes. The epithelioid cells are seen mostly in young subjects. There is also necrobiosis with nuclear degeneration, and when the process is at its height the whole follicle is beset with such products. As in the bronchial glands, the change stops short of liquefaction and coagulation.

In long-standing cases the vessels of the pulp may undergo hyaline degeneration of the musculosis and intima.

*Liver.*—Capillary hemorrhages are invariably found beneath the capsule, and sometimes in the parenchyma. There are foci

of infiltration with leucocytes, which may spread between the lobules; they show no tendency to degenerate. The hepatic cells may be fatty, but are usually normal.

*Kidneys*.—The albuminuria of diphtheria is from many causes, of which the poison circulating in the blood is only one. Cardiac failure, respiratory difficulty, fever, are adequate to produce this symptom. When albuminuria has been present, the kidneys may be quite normal, or they may show varying degrees of parenchymatous inflammation. In nine of twenty-one cases examined there was disseminated nephritis, with glomerular nephritis or hemorrhage. Besides the frequent occurrence of subcapsular hemorrhages, these may be found between and into the tubules and into the glomeruli. Considerable cell infiltration exists about the vessels, these cells often showing nuclear degeneration.

The glomeruli show capsular thickening, proliferation and desquamation of epithelium, and generally some albuminous exudation within the capsular. The capillaries show increase of endothelia and nuclei, with degenerative changes in the cells. The capillaries are profoundly diseased, showing clearly the action of the poison. The lining membrane of the straight and convoluted tubes is also remarkably affected. The whole cells may undergo cloudy swelling and disintegration, and be detached, filling the tubules with necrotic products, or only the inner half of the cell-mass disintegrates, the outer or basal half, containing the nucleus, remaining *in situ*. In the former case granular casts are formed; in the latter, the disintegrated products may eventually become hyaline masses and form hyaline casts.

The collecting tubes are dilated and bulged, being filled with finely granular albuminoid masses containing the remains of nuclei and cells or detached epithelia.

The blood-vessels of the kidney show inflammatory thickening of the adventitia and proliferation of the intima, rarely hyaline degeneration.

IV. *The development of the false membrane*.—Upon this the pathologists who have studied the disease hitherto have concentrated their attention. Whereas it had come to be considered that the false membrane was inflammatory in its origin, due to some specific irritant, yet it had been already pointed out by Heubner that there was some prior change in the circulation of the affected mucous membrane, so that it might be conceived as secondary to a general systemic infection.

According to Oertel's researches, the false membrane is to be looked upon as a part of the necrobiotic process, which occurs in many organs, and *the formation of a membrane is an*



*accident of position,—i.e., on the free surface of a mucous membrane.*

Degeneration of leucocytes and epithelial cells for the substratum of the false membrane, just as similar changes in deeper parts, produce "necrobiotic foci."

*Regeneration of diphtheritic tissues.*—These observations were made on two cases that died,—one of heart paralysis eighteen days after severe pharyngeal and laryngeal diphtheria, and the other of respiratory paralysis five or six weeks after the subsidence of pharyngeal symptoms. These showed that the false membrane was removed by purulent infiltration, necrobiotic products by liquefaction and absorption, while there is a new formation of epithelium and connective tissue from germ-cells or fibroblasts.

*Bacteriology.*—In the earliest formed membranes many varieties of microbes can be isolated; there are two main varieties, streptococci and bacilli. In the septic form the cocci were especially abundant; but in a case of laryngeal and tracheal diphtheria, the tracheal wound yielded a preponderance of bacilli. In membrane twelve hours old, micrococci were mostly upon the surface; while in the fibrinous net-work the bacilli, often in colonies, preponderated.

In a specimen twenty-four hours old, the upper margin was full of cocci, with a few small rods between them, and extending a short distance into the substance of the membrane. In a piece detached after six days, there was a similar mixture of microbes.

In the sections of tissues and organs these organisms were met with almost exclusively in the mucous membranes, nor did they extend for the most part to any great depth; they did not occur in the necrobiotic foci, and it is especially noteworthy that they were not found in any sections of the kidneys examined. Their absence here is in contrast with the author's examinations made fifteen years ago, but he states that the latter were septic cases, which then prevailed much more than now. This he attributes to the more thorough use of disinfecting measures, and the rejection of the old treatment by escharotics and the forcible removal of the membrane, which then prevailed.

*The pathogenesis of epidemic diphtheria* forms the second part of the monograph, the facts previously adduced being brought to bear upon that point.

The essential lesions are those of cell-change,—necrobiotic processes which are begun in the leucocytes and large round cells which appear so early in the affected tissue. These areas are met with in the epithelium of the respiratory mucous membrane, in the substance of that membrane, in the tonsils, in

the mucous membrane of the pharynx, the uvula, epiglottis, larynx, and trachea; in the cervical, bronchial, and submaxillary glands; in the follicles and agminate glands of the intestines; in the mesenteric glands and the spleen. The extent of these changes depends upon the amount of the poison and the duration of the process. Everything points to infection from one part to another in an organ, by lymph-channels, or by the blood, as in the case of the spleen, the disintegrated products furnishing the virus. The conclusion reached is that *diphtheria is primarily a local disease*. There is direct infection in the disease, the immediate action of the contagium being upon the epithelium of a mucous membrane, whence the process spreads, and it becomes in a variable time a general infective or systemic disease.

The poison acts upon the cells, causing their disintegration and death; infected particles of these cause a spread of the disease to other cells, while it seems that leucocytes and phagocytes convey the virus into tissues, lymph, and blood. The virus produces in the blood-vessels hyaline changes, which lead to ready rupture and hemorrhage.

The secondary inflammatory and degenerative processes, as in the heart, lungs, liver, and kidneys, and nerve-tissues, central and peripheral, must be due to blood infection, the amount of virus present in these organs not being enough to produce necrobiosis.

That the virus is due to micro-organisms is most probable, but that it is the product of their metabolism, a ptomaine, is equally probable, since the microbes themselves are almost wholly confined to the surface, while the action of the virus is wide-spread and deep.

The specific microbe of diphtheria, Oertel thinks, has not been isolated.

*Therapeutic considerations.*—These are dismissed in a few pages in the monograph. The false membrane must no longer be regarded as the first pathological and pathognomonic sign of diphtheritic infection, and it is not surprising that energetic measures aiming at the removal of the membrane are followed by a fresh formation, since the process is still going on in the mucous membrane.

Local treatment should aim at a thorough disinfection of the buccal and pharyngeal cavities, which will, at least, prevent secondary infection of stomach and intestines. This is best done by the frequent use of a disinfectant spray. How far the disease is spreading may be judged by the degree of lymphatic gland swelling, and the degree of fever may bear upon the extent of general infection.

We know but little as yet as to the action of drugs upon ptomaines, either preventing their formation or converting them into innocuous products; meanwhile, our chief hope lies in prophylaxis and the maintenance of the body in a state of nutrition, enabling the cells to combat the effects of the virus. Oertel concludes by saying that the whole subject proves the important part played by the cells in the disease. He puts forward his work as a contribution to Virchow's doctrine of cellular pathology, which is by no means so effete as some declare.

Hirst: A Case of Præ-Natal and a Case of Post-Natal Pneumonia. (*Med. News*, March 24, 1888.)

CASE I. *Præ-natal Pneumonia* (Philadelphia Hospital).—An Italian woman, aged thirty-five, at the time of admission pregnant six months, having for a year past suffered from a large lumbar abscess, constantly discharging pus, and exhibiting, during the time she was under our observation, all the signs of general septicæmia; gave birth to a living infant between the seventh and eighth months. The child was tolerably well developed for the period of pregnancy, but was deeply cyanosed, and evidently breathed with difficulty for the few hours that it remained alive. The post-mortem examination showed no other cause of death than the condition of the lungs, which were as large as though they had been well inflated with air; but in their consistency, weight, and color throughout, all the lobes of both lungs resembled a liver; placed in water they sank immediately. A microscopic examination showed an enormous overgrowth of fibrous elements and a desquamative pneumonia in the air-vesicles, which were compressed and distorted by the encroachment of the overgrown inter-alveolar connective-tissue.

This would seem, therefore, to be the first stage of what is known later as "white pneumonia," when the lung-substance has undergone fatty degeneration, and presents a peculiar appearance, which is usually regarded as symptomatic of congenital syphilis.

In any condition that interfered with the aëration of the mother's blood, or if, from any cause, the foetal blood could not be properly oxygenated, there might be an attempt at pulmonary respiration on the part of the foetus, resulting in catarrhal pneumonia, which ultimately, from the constant irritation caused by the desquamated epithelium, and the solid particles held in suspension or solution by the liquor amnii, would bring about the overgrowth of connective-tissue that characterizes a pneumonia arising *in utero*; this interstitial



inflammation of the lungs, therefore, need not invariably be ascribed to syphilis.

CASE II. *Post-natal Pneumonia* (Maternity Hospital).—A healthy young primipara fell in labor at 6 A.M. Membranes ruptured with the first few pains, and greater part of liquor amnii escaped. At half-past six in the evening os dilated, and at 10 P.M. the child was born, slightly asphyxiated, but soon revived. The mother stated that from the first the child breathed rapidly, and refused the nipple. By the third day it was evidently quite ill, and its temperature was found to be 101°. Fine râles were found over both lungs, but no distinct dulness. From its history and physical signs the case was thought to be one of pneumonia, from inspiration of blood and mucus during labor. Child died on the following day. In all the lobes of both lungs were found spots of solidification about the size of a chestnut, the remainder of the lung being apparently healthy. The right auricle of the heart was enormously distended; the foramen ovale was almost completely closed.

Kreider: Freak of Nature. (*Med. Regist.*, April 7, 1888.)

The writer reports the following interesting case:

Child born December 29, 1887. Labor normal. Both hands were turned inward at a right angle, and held firmly by the integument and shortening of the tendons of the muscles. Both hands were without thumbs. The fingers were all easily moved, and could be moved by the child. There was a strip on the top of the head, about two and a half inches long and one inch wide, which looked as if the skin and superficial fascia had been removed and a thin skin formed over it without any hair. The rectum, instead of passing through its proper outlet passed into the bladder, at least the feces passed through the penis. There was no anus or any appearance of one. The child seemed to do well up to the seventh day, when the bowels bloated, and the child died when eight days old.

Anderson: Chronic Nephritis (Contracted Kidney) with Subretinal Effusion in a Child. (*Lancet*, February 4, 1888.)

The patient was a girl nine years old. She presented the usual symptoms of advanced Bright's disease; she was wasted, very anæmic, but had no dropsy. The heart was hypertrophied and arterial tension was high. The amount of urine was large; it contained much albumen and many casts.

The ophthalmoscope showed double neuro-retinitis, with

numerous hemorrhages and considerable pale exudation in the papilla and retina. She was quite blind, but mentally clear.

The later symptoms were convulsions, hemorrhages, dropsy, and death by coma.

The autopsy showed advanced fibroid degeneration in the kidneys, the left weighing three-quarters of an ounce, and the right two and a half ounces; microscopically, there was marked fibrosis with hemorrhages.

Marked symptoms in this case existed for six months before death, although the girl was said never to have been well after measles at eighteen months of age.

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### III.—SURGERY.

Swan: The Treatment of Advanced Cases of Congenital Equino-Varus. (*Lancet*, April 9, 1888.)

When the patient has reached the age of ten years or thereabouts, either with early treatment and subsequent relapses, or without treatment, there is no hope of success by tenotomy and extension. There is thickening of the tarsal bones and a dense bursa, which covers the whole of the outer surface of the foot; the fifth metatarsal is not only deflected inward but it forms a distinct curve. In these cases the only thing which holds out any prospect of relief is excision of a portion of the tarsus. The portion removed should be the anterior three-fourths of the cuboid, all the external cuneiform except its posterior part, and the proximal ends of the third, fourth, and fifth metatarsal, the apex of the wedge removed being part of the middle cuneiform. The mobility of the foot remains almost unimpaired; this is explained by the fact that the joints which principally allow movement—viz., between the calcis and cuboid, astragalus and scaphoid, and also scaphoid and cuneiform—are not interfered with. An alteration, in fact, occurs only in the joints between the three outer metatarsal and external cuneiform and cuboid, in which their normal movement is limited.

The writer has operated in this manner upon thirty-four cases, with results in every way satisfactory, although they are not detailed in the article referred to.

Iverson: Rupture of the Urethra. (*Jahrb. f. K.*, xxvii. 4.)

Four cases of this accident are reported by the author, as follows:

1. A boy thirteen years of age suffered a fall, which was followed by severe pain in the perinæum and difficulty in walking. Examination revealed a hard tumor in the perinæum, especially to the right of the raphé and including the scrotum, the overlying skin being deeply discolored. The urine was freely passed, and contained no blood. The rupture of the urethra in this case was not extensive.

2. A boy nine years of age fell astride the edge of a box, and was subsequently unable to pass his urine, though the inclination was urgent. The entire perinæum was much swollen, and the overlying skin almost black. The posterior surface of the scrotum was ecchymotic. The bladder was greatly distended, and a catheter being passed along the urethra, blood flowed out and a rupture was discoverable. The bladder was punctured, and a tube secured in the wound. A deep incision was made in the perinæum, and a catheter carried through the wound into the bladder. This did not prevent extensive infiltration of urine, and peritonitis and death followed.

3. A nine-year-old boy fell astride the edge of a bed, causing violent pain and subsequent inability to urinate. A tumor developed at the site of the injury in the course of an hour, extending from the anus to the scrotum. The bladder dilated until it reached a level one and a half inches above the symphysis, and a catheter could only be passed to a distance of four inches from the meatus. The tumor was incised and a quantity of blood-clots removed. Then the catheter was passed into the bladder, and a quantity of urine was withdrawn. A rupture of the urethra one centimetre long could be felt through the incision, and the urine drained freely through the same openings. After three days the urine ceased to drain through the wound, and the patient was seized with chills and high fever. The wound was reopened, and the bad symptoms disappeared. After seventeen days the wound had again healed, the urine passed freely through the urethra, and an elastic bougie could be readily passed into the bladder.

4. An eight-year-old boy fell and sustained an irregular wound of the scrotum, through which both testicles and their coverings protruded. Catheterization showed rupture of the urethra anterior to the membranous portion. A catheter was secured in the urethra, but the urine drained through the urethral wound and the incision which was made to communicate with it. After fourteen days a portion of the urine passed along the urethra, but the remainder through the wound. The scrotal wound healed in five weeks, but a perineal fistula persisted. A stricture of the urethra resulted, and required



dilatation, and the perineal fistula healed nine weeks from the time the injury was received.

The author differentiates ruptures in the perineo-bulbous portion of the urethra from those in the membranous. The symptoms of the former are bleeding from the urethra, swelling of the perinæum, and retention of urine. In the latter there is seldom hemorrhage from the urethra, and no primary swelling of the perinæum, but progressive infiltration of urine, with sepsis and peritonitis. Previous to catheterization an attempt should be made to pass an olive-pointed sound.

A. F. C.

Auvard: A Case of Congenital Umbilical Hernia with Abnormal Anus. (*Bull. et Mém. de la Soc. Obst. et Gyn.*, February, 1888.)

The infant's mother was twenty-three years of age, and had already been normally delivered of a normal child at the age of twenty-four. The child in question was born at the end of the eighth month of gestation, after a normal labor, the breech presenting. The general appearance of the body was not extraordinary, except that there was a cylindrical tumor three or four centimetres in diameter at the site of the umbilicus, which included the elements of the cord and was covered with amnion. At a distance of six centimetres from the abdomen the umbilical cord presented the ordinary characteristics, and the ligature surrounded it at a distance of eight centimetres. On the anterior aspect of the cord, at a distance of three centimetres from the umbilicus, was an opening large enough to admit the end of the little finger, and from it exuded a thick greenish fluid which had all the appearances of meconium. The midwife had observed this opening when the child was born. The anus was permeable, and the genitals (male) were normal. The cord fell on the tenth day, leaving an umbilical tumor as large as a walnut in which there was an opening upon the anterior superior aspect. A sound could penetrate this opening to a distance of six centimetres. The child did badly from the first, and died on the thirty-fourth day of progressive athrepsia. The abdomen having been opened, a loop of intestine was found opposite the umbilicus, from which a diverticulum proceeded to the umbilical opening. Attached to the upper border of the umbilical ring was a fine white cord of fibrous tissue, which extended to the left until it was lost in the base of the mesentery. No other abnormality was discoverable.

A. F. C.

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## Original Communications.

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### THERAPEUTICS OF INFANCY AND CHILDHOOD.

BY A. JACOBI, M.D.,

President of the New York Academy of Medicine, Clinical Professor of the Diseases of Children in the College of Physicians and Surgeons, New York, etc.

(Continued from July Number.)

#### IV.—CONSTITUTIONAL DISORDERS.

##### 2. *Rhachitis.*

MANY cases of rhachitis which depend on hereditary influences might have been prevented or modified by attending to the parents before conception, or the mother during pregnancy. For a number of their constitutional ailments make their appearance in the offspring with the symptoms of rhachitis. If that precaution have been neglected, the injury inflicted upon the infant cannot be completely annulled; in many cases, however, it can be greatly modified. Thus there are a great many cases of early rhachitis which are due to the influence of mitigated syphilis in the parents. Indeed, some of the microscopical bone-lesions of the two diseases, as they are met with in the newly-born, are difficult to distinguish from each other. Such cases can be greatly benefited by an anti-syphilitic (mercurial) treatment, which must be continued through a period of many months.

Rhachitis due to, or connected with, *digestive disorders* de-

mands the correction of the latter. Gastric catarrh is not frequently primary; more commonly the consequence of faulty diet; but it is in both cases the cause of anæmia, and of either insufficient or abnormal secretion of both the mucous membranes and the glands. The gastric catarrh of rhachitis is pre-eminently acid, thus neutralization of the stomach is required before every meal and between meals. Prepared chalk, calcined magnesia, bicarbonate of sodium, the several preparations of bismuth, find their proper indications in this condition. The salicylate of bismuth, animal carbon, resorcin, find their places, beside aromatic teas, in complications with fermentative processes in the intestine and excessive flatulency. When the secretions of the stomach are merely insufficient, the addition of chloride of sodium in proper quantities will facilitate the formation of hydrochloric acid. When this does not suffice, pepsin and muriatic acid, the latter largely diluted, will take the place of the physiological gastric juice; and bitter tonics, and alcoholic stimulants, also diluted, will stimulate a normal secretion. Still, the selection of a proper food forms the main part of the indications. The principles of infant feeding, both in health and disease, I have laid down in the first of these essays; to them I refer; also to my suggestions on the same occasion, on the selection of animal foods so urgently required in rhachitis.

Malt preparations have found great favor both with the profession and the public. Unfortunately, the market has been swamped with all sorts of combinations and mixtures to such an extent that the confidence in their honest composition might easily be shaken.

Cod-liver oil, when given pure, is a powerful addition to antirhachitical diet. It is safer to avoid the compounds, emulsions, etc., and to rely on what is knowable. Diarrhœa is produced by it but rarely, in the cold or cool season,—most patients do not tolerate it quite well during the summer or on hot days,—but it has, besides being very nutritive, a favorable influence on constipation. If ever the bowels become too loose during its administration, the addition of bismuth, or a small dose of phosphate of lime, will correct the inconvenience.

Of the internal use of phosphorus I shall treat shortly.



Though rhachitis be a general disease, and not merely one of the osseous system, the anomalies exhibited by the *bones* are apt to attract most attention. The changes exhibited in the shape of the chest, which result from the pressure of the atmosphere on the soft rhachitical ribs, are not liable to disappear entirely. The "pigeon-breast"—that is, the prominence of the sternum and (or) the costo-cartilaginous junctures—remains for life to a greater or smaller degree, according to the severity of the affection or the restoring power of the expanding lungs. The curvatures of the diaphyses of the long bones are apt to be less marked in the adult because of the extension which takes place during growth. If ever splints are to do any good they must be applied before the bones have become hard again; the eburnification following the softness of the bones after recovery resists every degree of permissible pressure. The tendency to flat-foot acquired through the flabbiness of the ligamentous apparatus during the attempts of the child at locomotion requires straightening and sustaining by a shoe made strong enough to support the ankle; scoliosis, a Sayre's plaster-of-Paris or a felt jacket; the rhachitical groove round and above the insertion of the diaphragm, well-directed gymnastics of the chest; inflexible and ugly curvatures of the long bones, either osteoclasy (fracturing of the curved bone while leaving the periosteum intact, and resetting) or osteotomy (straightening the bone after it has undergone a cutting operation). During the acute rhachitical process the bones will not only bend, but are liable to be changed in their continuity. It is true that genuine fractures are not quite frequent because of the very softness of the bones and the succulence of the periosteum. But infractions (green-stick fractures) are quite common about the extremities and clavicles. The periosteum never participates in the injury; the bone is more or less bent upon itself; the ends are not entirely separated and are easily readjusted, but require splinting until the rhachitical process has terminated in general recovery. Immobilization of the entire body is sometimes required when the tendency to infraction is quite extensive.

Many of the serious results of softness of the bones could be avoided or mitigated by precautionary measures. Babies

in general, and those with incipient rhachitis in particular, must not be made to sit up before their vertebral columns are able to support them. They must not be carried about in an erect posture, nor on the same arm always. They must be kept and carried about in a reclining posture; better on a hair pillow than on the arm until they feel strong enough to do without it. Thus scoliosis can be prevented. They must be discouraged to walk before their limbs are sufficiently strengthened; thus the curvatures of the diaphyses of the lower extremities, which in part result from the vertical weight of the body on the feeble limbs, are reduced to a minimum.

Craniotabes, the rhachitical softening of the cranial bones, is one of the earliest symptoms of the disease. The bones which commenced their post-natal ossification in a normal manner begin to soften to such an extent that the parietal and occipital bones exhibit a number of spots in which the osseous tissue has entirely disappeared. The hair falls out in that neighborhood, the scalp is perspiring copiously, the veins get dilated, the bones and meninges hyperæmic, and meningeal effusions are quite frequent. The softness of the bones results in asymmetry of the cranium, which is flattened by the very pressure of a soft pillow.

The local hyperæmia forbids the use of warm bonnets and feather pillows. A soft hair pillow must be so arranged that the head, together with the body, can be comfortably carried without any pressure. Consecutive brain symptoms require appropriate treatment. Great convulsibility demands bromides, chloral, and mild opiates, which are well tolerated in this condition. The perspiration requires cooling with water, or water and vinegar, or powdering with one part of salicylic acid mixed with ten parts of oxide of zinc and twenty-five of starch. The general treatment of rhachitis improves this local cranial symptom, which is quite serious. In former years I was in the habit of giving a good prognosis provided the next six or eight weeks would pass without fatal symptoms (convulsions, etc.). That period was generally sufficient to so change the general nutrition and local condition as to restore a fair average of a healthy condition of the cranium and its contents. The experience of late years has shortened this

period. What I suggested in a brief paper on the use of phosphorus in the treatment of chronic and subacute diseases of the bones in the "Transactions of the Medical Society of the State of New York," of 1880, and in a paper on anæmia in infancy and childhood read before the Medical Society of the County of New York in 1880 (*Arch. of Med.*, February, 1881), has proved a great success in other hands. For it is to Kassowitz that the credit of the introduction of phosphorus as the main remedy in rhachitis is mainly due. When, twenty years ago, C. Wegner fractured the bones of rabbits and fed the animals on minute doses of phosphorus, he found that these bones would heal in a much shorter time than those which were not so supplied. This observation induced me to employ the drug in all cases of subacute and chronic ostitis, Pott's disease, caries of the tarsus; and a great many cases led me to conclude that recovery was more readily accomplished under this treatment. Phosphorus is, by virtue of its irritating effect, when given in small doses, a tissue-builder, when in large doses, a tissue-destroyer. Thus it is that I am convinced of its tissue-building properties in other parts also. I may mention here, before I shall have an opportunity to return to the subject *in extenso*, that I have availed myself of this quality of phosphorus for other purposes also. It has served me well in those ominous cases, of purpura and similar processes, in which a congenital or acquired ill nutrition of the blood-vessel walls results in habitual hemorrhages.

Kassowitz's results with the use of phosphorus in rhachitis are generally good. The cases in which it has rendered me its best services are exactly those alluded to, of craniotabes. A very few weeks suffice to change the condition of the cranial bones considerably, the softened parts become smaller and harder, and the consecutive symptoms milder. Of equal value it is in acute rhachitis, with its extensive acute epiphysitis, rapid pulse, diarrhœa, general feebleness, and symptoms of scurvy.

The dose of phosphorus in these cases is from one-two-hundreths to one-one-hundred-and-fiftieth of a grain three times daily. I generally prescribe the oleum phosphoratum of the Pharmacopœia, which contains one part of phosphorus



in ten parts of ether and ninety of oil. Half a minim contains one-two-hundredths of a grain. The oil solutions must not be kept in a concentrated form lest they be decomposed. A mucilaginous emulsion is the best mode of administration, for which I sometimes substituted Thompson's solution. On no account must we be tempted to try in their place the phosphates, the uselessness of which—in such cases—I have discussed extensively in a previous paper. The hypophosphites of the Pharmacopœia, with or without iron, are a better preparation than the former.

*Laryngismus stridulus*, the crowing inspiration of infants, is almost always connected with craniotabes, and caused by its meningeal and encephalic results. It consists of two stages, the first of which is that of paralytic apnoea, the second of a long-drawn and loud inspiration through the spastically contracted glottis. The causal treatment is that of rhachitis in general, of cranial rhachitis in particular. Before, however, it can accomplish a permanent effect the single attacks of, and the general tendency to, laryngismus require attention. For any attack may prove fatal, though the assertion of Vogel's, who expresses the opinion that most cases of laryngismus are fatal, is grossly exaggerated in my experience, which has not changed in this respect since my utterances in 1871.\* Beside the phosphorus, syrup of the iodide of iron, and other treatment, the constipation requires more than the usual attention, for the nerve-equilibrium is easily disturbed by a slight irregularity in any of the organic functions. To soothe its general vulnerability the regular administration of the bromides (twelve or fifteen grains daily of a mixture of the potassium, sodium, and ammonium salts) or a few grains daily of the valerianate of zinc are indicated. Many cases bear one-sixth of a grain of codeia in the twenty-four hours. These cases of excessive irritability are quite precarious. In them the ears require particular attention, for the slightest (external or) internal otitis is liable to produce convulsions. In them even the lancing of gums, where there is but a suspicion of local pruritus, may become pardonable. The attack can be cut

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\* American Journal of Obstetrics, etc.

short by shaking the infant, or slapping the face with a cloth dipped in water, or using the spark of a Leyden flask (for there is no time for the administration of the interrupted current). General convulsions following the attack, which are not uncommon at all, require the inhalation of chloroform or the rectal injection of from four to eight grains of chloral hydrate.

The rhachitical disorders of the *respiratory organs* owe their origin to several causes. In rhachitis the heart is of average size, but the arteries are abnormally large. Great width of arteries lowers the blood-pressure. Thus it is that the murmur of the basilar artery is heard over the fontanel of the rhachitical infant; thus also that the muscles and bones suffer from insufficient nutrition; thus, finally, that the circulation in the respiratory organs is slow and sluggish, with a tendency to produce congestion and catarrh. Other causes of the chronic bronchial catarrh of the rhachitical infant, which is so apt to become bronchitis and terminate in broncho-pneumonia, depend upon the smallness of the contracted chest, which compresses the lungs; and the tumefaction of tracheal, bronchial, and mediastinal *glands*, which are in close lymph communication with the bronchial mucous membranes. There are but few thoroughly developed cases of rhachitis without them. Not infrequently can some of them be felt in the supra-clavicular spaces; more commonly can they be percussed behind the manubrium sterni, the dulness of which is but partly thymic in many cases. Sometimes they can be discovered by percussion of the infra-clavicular region of the (right or more frequently the) left side. These glandular swellings, which point to and explain the frequent relations of rhachitis, scrofula, and tuberculosis with each other, are frequent appearances in the autopsies of rhachitical babies who finally died of the last developments of their chronic catarrh.

This tendency to glandular swellings requires early attendance. It is here where cod-liver oil and the syrup of the iodide of iron are mainly serviceable. In many cases the addition of half a minim of Fowler's solution, administered three times a day, acts favorably. This is the condition of things in which the use of cold sponging, salt-water bathing, salt air, are particularly beneficial. Out-door life must be in-

sisted upon, and there are but few reasons—mostly of a local character—which forbid such babies to enjoy fresh air at all hours of the day and night.

Subacute or acute inflammations of the respiratory organs, when they have made their appearance during the chronic rhachitical catarrh, require, beside the usual rational treatment, some additional measures. More care, than in an average case of the otherwise healthy, must be taken lest the faltering strength be exhausted before the acute disease has had time to run its course. The sluggish circulation depending on general debility and the large size of the arteries, demands the administration of heart tonics,—digitalis, strophanthus, sparteine, caffeine, or coffee, from the very beginning, and besides small doses of alcoholic stimulants at an early stage, the use of stimulant expectorants, such as carbonate of ammonium or camphor. There is a positive contraindication to antimonials and squills; even ipecac must be avoided because of its possible depressing effect.

Rhachitical *constipation* is mostly due to the incompetency of the muscular layers of the intestine and the abdominal wall. Thus purgatives must be avoided in its treatment, with the exception of those cases in which the accumulation of fæces in the bowels happens to be attended with serious consequences. In these an occasional dose of calomel will act both as a laxative and a disinfectant. When an acid gastric catarrh accompanies the intestinal weakness, calcined magnesia in doses of a grain, given on an empty stomach, or before meals (never after), repeated several times daily, will neutralize the abnormal acidity of the stomach while opening the bowels. A daily enema of tepid water will suffice to alleviate the troublesome symptom. Cod-liver oil, while being administered on account of the general indications, has also a beneficial local effect. Pure cow's milk is more contraindicated in this condition than in almost any other. The artificial food must contain a copious addition of salt and sugar, and oatmeal rather than barley. Gentle massage of the abdomen and strychnia, one-two-hundredths of a grain, three times a day, improves the muscular strength. The syrup of the iodide of iron, in three daily doses of a few drops, and the regular administration of beef preparations, will



improve the constipation with the other symptoms ; particularly when this treatment is commenced at an early period. For it is at an early period, generally in the second or third month, that this rhachitical constipation will make its first appearance. It is one of the first symptoms of protracted rhachitis, and is diagnosticated from what I have described as congenital constipation,—which depends on an abnormal length of the sigmoid flexure,—by the fact that the latter begins at birth.

(To be continued.)

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## ON VENEREAL AND GENITO-URINARY DISEASES OF CHILDREN.

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(Concluded from July Number.)

### VIII.—MEDICO-LEGAL ASPECTS OF VENEREAL DISEASES IN CHILDREN.

IN this paper I propose to consider merely the medico-legal aspect of venereal diseases as they occur in children, irrespective of their bearing upon the general range of syphilitic infection,—that is to say, only as regards the question of the transmission of syphilis and gonorrhœa from children to nurses, and *vice versa*. The first point which I shall consider will be as to the duty of the expert in determining whether the disease has been transmitted to the child by its nurse, or whether the child has been the source of contagion. In this country such contingencies are less likely to happen than they are abroad, for the simple reason that, comparatively speaking, few children are put out to nurse, and the chances of infection, therefore, are materially diminished.

The usual manner in which the medical expert is called

upon is by a complaint being lodged against the parents of a child by the nurse or her family for damages in consequence of the infection of the nurse by the child, or else damages are sought by the parents against some person or persons for the infection of their child, either as a consequence of attempts against virtue or from accidental causes. In nearly all these cases the medical man unfortunately acts less as an expert than as a paid advocate, because his services are usually retained, not by the court for the purpose of explaining and sifting the medical phenomena present in the case, but by the different parties to the suit, in order, as far as possible, to befog the testimony and to cause a disagreement by the jury. In other words, the medical man is less of an expert than an advocate; an unfortunate position generally for the physician to be placed in.

But, even with all these disadvantages, the ground which the medical man has to cover should comprehend an examination of all parties concerned,—not only the plaintiff, but the defendant as well.

And in the first place, as regards the plaintiff,—that is to say, the nurse, who oftentimes is the person making the complaint. The first question to be answered is, Has the subject syphilis? A not at all unimportant point, because oftentimes a suit for damages is instituted upon entirely erroneous grounds, and it not infrequently happens that the person is suffering from some complaint which perhaps may simulate syphilis, and which has no relation with it. In this connection I would call attention to the case of Besnier, which I quoted in the June number of the *ARCHIVES*, where a woman and her two children had lesions which, although bearing a close resemblance to syphilis, were pretty clearly proved to have been a benign affection, and not a case of syphilis at all.

Then again, the nurse may be affected with what is known as Paget's disease of the breast, which may occasionally closely simulate an initial lesion, but which is really a cancerous affection, and certainly has no bearing upon syphilis whatever.

If it be found that the nurse is suffering from syphilis, the next question to determine is, where is the initial lesion, and whether it be genital or extragenital. Of course, if the in-

itial lesion be present, and seated upon the genitals, that establishes the impossibility of it having been derived from the child, inasmuch as in cases of infection from this source the initial lesion would be seated upon the mammæ, and in a larger proportion of cases upon or close to the nipple.

Supposing the disease be extragenital, it would not even then necessarily imply that it was conveyed by the child itself, because the lesion might be seated upon the lips, tongue, and other portions of the body outside of the genitals; and if seated there, the presumption, although not conclusive, would be fair that it was derived from other sources than the child itself. When it is seated upon the lips, it is possible that it was derived from the mucous patches on the child's lips, conveyed by the nurse kissing the infant; but the medical man would view such an infection with suspicion, and first find out whether it was possible for the disease to have been conveyed by kissing some adult who was himself or herself the subject of disease. In this connection one point should be strongly insisted upon, and that is that the person making the complaint should be subjected to the most rigorous examination to discover, if possible, either the initial lesion or some trace of it, and this examination extended to even the most unusual and out-of-the-way portions of the body. Thus, besides a thorough genital examination, the anus and rectum should be carefully explored, and the lips, the tongue, as well as the throat, should be subjected to the most careful scrutiny. The hairy scalp, the ears, breast, fingers, and even the toes, should also be examined to see if there be any sign whatever of the initial lesion; and the reason is this: if any portion of the body be overlooked in an examination, stress will be laid upon the fact by the defence that the disease might have sprung from infection in that portion which was omitted, and would be used to show the improbability of infection from the child.

But it may sometimes happen that the initial lesion, which is frequently very evanescent, and heals up rapidly, may be gone, and the surgeon should then carefully examine to see if any trace whatever is left behind, in the shape of induration or of any glandular enlargement. Of course any eruptions what-



ever upon the skin and mucous membranes should be carefully noted.

The next step, then, would be to examine to see if the initial lesion is only mammary or not. By that I mean whether the initial lesion is single or multiple. In the larger proportion of cases there is but one initial lesion, but there are exceptions to this rule, and the surgeon should bear that carefully in mind; and suppose in the course of his examination he was to find that the nurse was the bearer of two lesions, one seated upon the genitals and the other upon the mammæ, he would be perfectly justified in considering that the infection took place at one and the same time, and that the mammary disease was probably due to the same cause as the genital infection; in other words, that it was probably due to a direct infection by the natural way, and not as a result of contagion from the child, because it may happen that an infection might occur from an unhealed initial lesion, or from mucous patches of the male organ, and, at the same time, another point of inoculation occur in consequence of kissing and fondling the mammæ at the same time that the inoculation resulted per coitum. So that it may be broadly stated that the infection of the genitals would almost definitely settle the question against the probability certainly, if not possibility, of infection from the child. The surgeon should be particularly on his guard against mistaking mucous patches of these different portions of the body for initial lesions; but his general knowledge of syphilitic lesions will probably save him from making such a mistake.

The next question for the physician to determine is, Was the nurse at the time of her engagement entirely free from syphilis? in other words, Was she a healthy woman when she commenced to suckle the child? This point may be settled,

*First.* By the medical certificate, or the opinion of the medical man who examined her when she was engaged; for, of course, no medical man would allow a wet-nurse to be engaged without, in the first place, knowing about any antecedent disease in her, and, in the second place, without subjecting her to a thorough examination in order to settle this point. So the medical expert should at once refer to the physician who examined the nurse prior to her engagement by the family.

*Second.* If a married woman, the nurse's husband and children should also be examined, and if any or all of them are syphilitic, the presumption would be very strong that the nurse also was syphilitic prior to assuming her duties. If, on the other hand, they are found to be free from disease, the surgeon then is enabled to concentrate his examination upon the nurse alone, without taking into consideration her family at all. Diday, in his work (*"Traité de la Syphilis des Nouveaux nés et des Enfants à la Mamelle"*), considers it possible that the nurse may acquire syphilis from her husband, and then from the child besides. From that view I should unqualifiedly dissent, because the woman having once contracted the disease, no matter from what source, would be proof against a second infection while the diathesis remained, and it would be the surgeon's duty to find out which was the probable source of infection, the husband or the child, for it must be one or the other, and cannot be both. His view also of the possibility of mediate infection—that is to say, by the nurse conveying the secretion of some syphilitic lesion from a diseased nursing to a sound one without herself becoming affected—I regard as not only not proven, but so highly improbable as to be excluded from any serious consideration.

The next line of examination which should be taken up is to see whether the child is diseased or not. If not, of course the matter then falls to the ground so far as the question of contamination by the infant is concerned. But supposing that it is, the surgeon should then satisfy himself that the lesions in the child are chronologically coincident with the syphilis of the nurse; in other words, whether the lesions in the child are of such a stage that it would have been derived from the nurse, or whether the nurse's lesions are such that it could possibly have been derived from the child; and in this connection Fournier, in the *Gazette des Hôpitaux* for 1885, gives a case which bears upon this question. A man and his wife were threatened with a suit for ten thousand francs by a nurse, who claimed that she had contracted syphilis from her nursing, their child. The history was that the father, as a bachelor, was syphilitic, and, not being entirely cured of his disease on marriage, infected his wife. The first child born to them

was syphilitic, and died. The second child was born with suspicious symptoms, which proved to be syphilitic, but the lesions were those of the early stage. When the nurse came to be examined, she showed two superb tubercular syphilides on the back, which were evidently of a late stage, and the earlier lesions of which must have antedated the birth of the child. The suit was brought, and on trial it was proved that six months anterior to the birth of this child, who, it was alleged, was the source of her disease, the nurse had been treated at the Hôtel Dieu for syphilitic lesions which even then were due to an old infection. This case shows the importance of the surgeon being thoroughly familiar with the dates at which the various syphilitic lesions are likely to make their appearance, for it by no means follows, even supposing the child to be syphilitic, that the nurse's disease was derived from the infant. The surgeon should be particularly careful to note whether the lesions in the two are of corresponding dates, or whether they are of such a character that they could not possibly have resulted one from the other. Thus, suppose that the child does show unquestioned marks of inherited disease, that inherited disease would very probably be of an early type. But whether so or not, suppose that in the nurse it was discovered that the lesions were those of a late date (ulcerative), the early symptoms of which must have occurred at some time anterior to the birth of the child, the surgeon would then be perfectly justified in stating that the infection must have occurred from some source outside of the child, and that the child, so far as the nurse is concerned, is perfectly blameless.

But, on the other hand, suppose we find that the nurse is the bearer of an initial lesion which is extragenital, and seated, say upon the breast; that no eruptions whatever have made their appearance, and that there have been no evidences of the earlier so-called secondary stage; and, furthermore, it is shown that the child, although at the time when the nurse first received it seemed to be healthy, afterwards showed loss of health, the breaking out of an eruption of the skin and of the mouth, the presence of what is so often mistaken for and called a "sprue," symptoms to which attention has been



called in previous papers in the ARCHIVES, and that after these symptoms had appeared in the child this mammary sore appeared upon the nurse, the presumption that the child is the source of trouble would be very strong. But the surgeon must even go one step beyond. He must find out if by any possibility this infection could have been derived from some other source,—to wit, whether any fondling and kissing of the nurse's mammæ had taken place by a lover or husband, or whether she had given suck to some other child outside her nursing, and also whether these persons, if any such there be, were also diseased. This would, of course, make it difficult for the surgeon to determine which could possibly have been the source. But even here he is not as one without hope, for if the act of kissing or of suckling had been done but once, and this sore had occurred before the time at which an initial lesion would make its appearance from such sources,—to wit, before the twenty-fourth day,—then the first child would have to be still considered the cause of disease, and the others as having nothing to do with it.

Thus much for the examination of the nurse, who in this case is the plaintiff. Now for the examination of the child, the source of this trouble, who, through his parents, plays the part of defendant. Abroad, where the medical man is really called upon as an expert,—that is, by the court to assist it at arriving at a conclusion,—the physician has a been a better opportunity for examining the child than he has here; for if he be retained by the plaintiff's attorney, the parents might, and very probably would, refuse to submit to any examination of their child. Abroad this, of course, would prejudice their case materially; in this country it would have little effect.\*

But we will suppose that the parents are willing to bring the child for examination, and the physician then has an opportunity of deciding as to what part the child plays in the nurse's disease. Before examining the child itself the parents should be asked,—

First, as to its age.

Second, what symptoms, if any, have been noticed on the child.

Third, as to the date when the lesions appeared, and es-

pecially as to the nature of those lesions which were first seen ; and,

Fourth, the name and address of the ordinary medical attendant of the child, with whom the examining physician should at once communicate in order to find out what the child's history has been.

It is an open question with some medical men as to how far the mother should be questioned as to any disease in herself. Of course this point must be determined by each physician for himself, and I shall merely premise what I suppose goes almost without saying, that this part of the examination would require the utmost delicacy and tact on the part of a medical expert. Generally, however, as the suit has already probably begun, the mother herself knows for what purpose she has been brought, and will not, therefore, be shocked or astonished at being asked questions which, under other circumstances, she would perhaps resent as an impertinent curiosity. As regards the father, of course he must be included in the examination, and questions may be asked freely of the husband which perhaps the surgeon would feel a little delicacy in asking of the wife. The child should be then stripped and thoroughly examined to determine, first, whether it has syphilis at all, and, second, whether this syphilis is due to acquired or hereditary causes. And in this connection let me anticipate a little by calling attention to the fact that every case of syphilis in the child is not necessarily hereditary. Children, even babies, sometimes contract the acquired variety of the disease, and the surgeon must keep that fact steadily in view. Of course, if the child has no syphilis, the case ends then and there, for the child cannot convey what it has not got. But we will suppose that the child has syphilis, and the question then becomes, How are we to determine whether this disease is hereditary or acquired?

But first the examination of the parents may show traces of syphilis so clearly in themselves as to render the answer to this question apparent, and they are then indirectly responsible for the syphilis of the nurse, providing always that in this latter the disease is evidently one that would have been acquired within the period of suckling, and especially, if the form of

the disease is that of initial lesion of the nipple, derived at the time of suckling, but not before. The surgeon believes upon examination of the child that the disease is hereditary in origin. What are the signs which will prove it to him, and which, remember, he must be prepared to testify to upon the witness-stand in support of his theory. First and most important of all, the absence of the initial lesion or any trace of it, for if the disease be from an acquired source this is present, or else its traces are, together with the glandular enlargement which accompanies the initial lesion of syphilis. In the hereditary type these are never present. But it may possibly happen that the initial lesion has been present and left no traces. The glandular enlargement here would tell the story in a larger proportion of cases. But supposing that they should be negative, note the time which occurs between the period of suckling and the charge of infection made by the nurse.

The next point would be the evolution of the symptoms. If the disease is of the hereditary type a general explosion occurs upon the skin and mucous membranes, coryza is present, the nails are invaded, osseous lesions occur, nervous and visceral affections appear, all of which occur either about the same time or within a few weeks of each other; and the character of the lesions which occur upon the skin and mucous membranes should also be noted. Thus, the existence of a pemphigus would settle the question as between hereditary and acquired syphilis, because this variety of lesion does not occur in the acquired type of the disease in children: it is a sign of inherited affection. Then again, the general condition of the child should be regarded; its emaciation, its loss of strength, the senile appearance, the prominent forehead, and the rhagades at the angles of the lips, all go to make up a picture which is pathognomonic of the inherited type of the disease.

Then again, the birth of the child, occurring, as it sometimes does, before term, is another point to be noted, and if the birth be not hastened, the lack of development which occurs in the child, its stature below the normal standard, and the frequent existence of cranial deformity which Parrot described as natiform, the existence of hydrocephalus, and sometimes of microcephalus. But the surgeon must also bear this in mind,



that a syphilitic child may be born apparently perfectly healthy and remain so for some weeks.

Now comes this special point. The disease begins without any pre-existing initial lesion, absolutely taking it out of the category of acquired syphilis. No case of acquired syphilis, whether in the babe of a month old or the adult of any age, ever begins without the initial lesion, and if the surgeon can clearly prove to his mind that that symptom has been absent, I was almost going to say, he need go no further. But, of course, he will, in order to make his chain of testimony as strong as possible, and the subsequent symptoms which appear and which I have already enumerated, the rapid and serious course which the disease pursues in the vast majority of cases, different from what takes place if the disease is acquired, will serve to corroborate the correctness of his view as to the question of hereditary versus acquired syphilis.

But the disease may not be hereditary,—it may be acquired. How is the surgeon going to tell? First he examines carefully for the existence of the initial lesion, and unless a long time has elapsed, he will nearly always find either this symptom existing or some trace of it. Then the course which the disease pursues is entirely different. There is a period of incubation of between six and seven weeks from the time of the appearance of the initial lesion until the subsequent symptoms make their appearance. These symptoms which then occur do not differ at all from acquired lesions elsewhere. The macular syphilides, the mucous patches of the mouth and throat, etc., all present a different picture from that which we find to be the case when the disease is of the inherited type. In this regard the physician should pay particular attention to dates. If any lesions of the secondary stage appear earlier than the end of the second or the beginning of the third month of extra-uterine life, the surgeon can throw out the question of acquired syphilis. Such lesions would not appear earlier than those dates.

If the child's disease be of the acquired type, the question then comes up, How did the child acquire it, from the nurse or not? It does not necessarily follow that the nurse was the cause of the child's disease, for she, although syphilitic, may

yet have the disease in such a form as to be no longer inoculable, as, for example, if they be of a late date or simply confined to dry eruptions of the skin. If the case be one where the nurse appears as plaintiff, the surgeon must satisfy himself that the disease of the nurse could by no means be contracted from the child's acquired syphilis. The nurse would then show not lesions of a late, but those of an early date, and especially the existence of the initial lesion. If the nurse's symptoms are such that they could by no possibility have been conveyed by her to the child, the expert really then has no need to testify upon this point at all. But if the parents accuse the nurse of having given the disease, it becomes all-important to find out how the child acquired its disease.

As I have already said, mediate contagion may be excluded as so extremely improbable as not to be worthy of consideration, and the possibility of infection by the milk may be excluded for the same reason. So far as our present knowledge extends, the physiological and normal secretions of the body are not capable of conveying syphilis, and the only one which in this instance would be at all considered would be the milk. But it must be remembered that the child may contract syphilis from its father, who, during the wife's pregnancy, has contracted the disease, and does not convey it to the child until after its birth. Mireur ("Sur Hérédité de la Syphilis") gives a case in point where the child, two years of age, acquired syphilis from the father by kissing.

Then again, the child may contract its disease from outside sources: from relatives, from playmates, from being suckled by a strange nurse, from nursing utensils, from circumcision, and from vaccination; so that all these points should be carefully considered by the surgeon in making up his mind as to the possible sources of the child's acquired syphilis.

Another thing for which the surgeon's aid is oftentimes invoked is with regard to the possible infection of a child by gonorrhœa, and in this case the surgeon oftentimes has more difficulty in determining the true condition of affairs than he has when he has to deal with syphilis. In these cases the parents of the child are the ones who usually make the complaint, and the infant is brought to the surgeon suffering from a purulent dis-

charge from the genitals which the parents state has been due to improper attempts by some person. The surgeon should always insist upon being able to examine the accused person, and should never be willing to accept either the parents' testimony or the result of his own examination of the child as conclusive. The statement made by the parents is to the effect that such and such a person had been playing with the child, and that it subsequently complained of pain in passing water, and that its linen was found to be stained, and that upon examination a purulent discharge was present, attended with swelling and irritation of the genital organs. The parents very naturally insist that this was due to improper liberties being taken with the child. The surgeon should be careful to remember that many cases of purulent irritation of the genitals, in female children particularly, may ensue from natural causes, and he should carefully examine, first, for the presence of worms, especially ascarides, and, second, for the existence of genital eczema, produced either by constitutional or local causes. He should then carefully examine to find if there be any evidence of violence done to the genital organs of the child, as in an attempt at rape such evidences are nearly always present.

Sometimes the accusation is made unjustly, for the person accused, upon being examined, presents no signs whatever of any gonorrhœal affection; but this in itself does not necessarily preclude the impossibility of an attempt at rape, because where forcible connection is attempted the injury done to the parts is so great as to induce a purulent discharge from the vulva. But, of course, so far as this is concerned, except inasmuch as the medical examination detects traces of violence done, the surgeon has nothing to do. He can merely testify to what he finds, not as to what he believes to have been done by the defendant. If the accused person is found to be suffering from a purulent discharge, it is very possible that the attempt at coitus, or even mere friction of the diseased organs against the genitals of the child, would be sufficient to produce a discharge, and the weight of evidence would be rather against the accused person under such circumstances. Examination should also be made of the secretion, both from the child and from the accused person, in order to discover the existence of



the gonococcus of Neisser in either one or both discharges; but I must confess that in the present condition of our knowledge I should not be inclined to attach much importance either to the presence or absence of this parasite, as I think it is far from proven yet that it is necessarily the accompaniment of gonorrhœal discharges. I believe it may and does exist in discharges which have nothing at all to do with gonorrhœa. Nor would its presence in the discharge of one, and absence in that of the other, militate against the possibility of the child's disease being due to infection from the accused person. I am inclined, in other words, to regard this point as rather of negative than of positive value, and unless there were other reasons for believing in the guilt of the accused person, I think he should be given the benefit of the doubt.

There is one point which is of importance in these cases, and that is the presence of an urethritis in the child. Inflammations due to innocent causes do not seem to affect the mucous membrane of the urethra, but if the disease be due to an infection from a gonorrhœal source, it very frequently happens that the urethral mucous membrane is implicated. In other words, if a urethritis is present, the surgeon would be justified in regarding it as due to a contagion. If there are evidences of violence, if the mucous membrane is lacerated and bruised, the entrance to the vagina patent and the hymen has been destroyed, it is evidently due to some violence, and if no other source of violence be discovered, it is presumable that it is due to an attempt at rape; but short of that the surgeon should be very careful in allowing himself to be misled by representations of the parents to fasten an accusation upon an innocent person.

In the case of male children, the discharge may come from a tight foreskin, the presence of worms, or the existence of a stone in the bladder, and from lack of cleanliness. All of these circumstances should be carefully taken into consideration and as far as possible eliminated one by one. But some few cases do occur in which young girls having charge of male children have attempted coitus with their charges when they themselves were suffering from a vaginal discharge, and, incredible as it may seem, there are on record a few such cases.

The surgeon under these circumstances is fairly put at his wit's ends to determine whether such is the case or not from a mere examination of both patients, particularly as the large majority of male babies have long foreskins, which are very liable to become inflamed, and there is, so far as I know, no absolutely positive manner in which the surgeon, from a mere examination, could state positively that it was due to improper relations between the girl and the infant unless the former chose to confess it. The child is too young to describe what has taken place, and the girl herself would naturally deny having been the cause of the child's disease, or having made any attempt against his virtue. The surgeon himself may be able by tact and shrewdness to extract from the girl a confession of her guilt, but in a court of law such testimony as that would be excluded, and the surgeon would be pinned down as to whether the disease under observation was conveyed by the girl to the child or whether it might not possibly be due to other causes. The diagnosis would then have to be arrived at by a process of exclusion, and everything else being excluded, it would come down to how the disease could possibly have been conveyed to the boy.

We will suppose there is no evidence of stone and only a tight foreskin present. The phimosis may be so decided as to prevent a retraction, in order to see whether the discharge is urethral or preputial. Under these circumstances, the surgeon cannot possibly decide. If, on the other hand, the prepuce is not so tight as to exclude retraction, and the discharge be found to be urethral, and only urethral, then the surgeon would be justified in giving it as his opinion that it was due to an infection from some source or other; but he must be careful to eliminate all possible source of disease other than that of gonorrhœal contagion, and if he is unable to make the statement with satisfaction and certainty to himself, he is bound to testify to the fact that he is unable to decide from his examination as to the sources of the child's disease. Fortunately, such cases as these are rare, but they sometimes occur, and it is because the surgeon is unwilling to say that he does not know, and from his desire to make some long-winded and irrelevant explanation, that expert testimony

in these cases is so often looked upon with contempt and distrust. There ought to be no sense of shame on the part of the surgeon under these circumstances, which are exceedingly difficult to determine, which should prevent him from saying, I do not know, I cannot tell.

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## CALCIUM CHLORIDE IN GLANDULAR AFFECTIONS OF THE NECK.

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IN the progressiveness of medicine many of our old and important remedial agents are without adequate reason pushed aside, and become superseded by something else which has been more recently placed in the therapeutic market. Such has undoubtedly been the history of calcium chloride,—an agent held in the highest esteem by the earlier practitioners of medicine. It is hardly recognized by therapeutic authors of the present day. ~~It is not mentioned by Wood (H. C.), Ringer, Bartholow, Stillé, Binz, Köhler, Schmiedeberg, and Nothnagel and Rossbach.~~ Dr. George B. Wood ("Therapeutics and Pharmacology," vol. ii. p. 369) says that before the discovery of iodine, calcium chloride was among the most popular remedies in scrofula, and that the united testimony of many practitioners shows that it possesses useful powers in these affections. It was likewise a favorite remedy with the late ~~Dr. Warburton Begbie, and~~ Dr. S. Coghill, of the Royal National Hospital for Consumption at Ventnor, in a communication to the *Practitioner* (vol. xix. p. 247) states that he has "again and again seen chronically indurated and enlarged glands, which absolutely amounted to deformity, and which had resisted all previous treatment, yield, even in adults, to the administration of this salt. In children and young persons, when the sleep becomes restless, the breath fetid, the tongue foul and coated, the tonsils enlarged, I know of no remedy approaching it in value. The colliquative diarrhœa, which so



often accompanies this condition, and above all that obstinate lientery which is seen with hypertrophy of the mesenteric glands, yield to the solution of the chloride of calcium like a charm."

I have used this agent for a number of years, both in private and public practice, and can fully indorse the strong views expressed by Dr. Coghill, especially in so far as scrofulous affections of the neck are concerned. Very often one meets with pale, rickety children, who have swollen cervical glands, poor appetite, coated tongue, constipation, and in whom there is a general indication of malassimilation. Such patients usually receive the routine treatment of cod-liver oil internally, and iodine, and perhaps cod-liver oil, externally. This succeeds sometimes, but oftener fails. Here the chloride of calcium acts admirably. It reduces the enlargement, promotes nutrition, and is generally more efficacious than anything I have ever prescribed. Its resolvent power is equally marked in the glandular swellings of adults, although here it requires a longer time, and its action is facilitated by the simultaneous application of iodine.

This agent must not be mistaken for the chloride of lime, —the ordinary disinfecting powder,—the composition of which is entirely different. By prescribing the granular calcium chloride this possible error will be avoided. The dose is from two to four grains for children, and from ten to twenty grains for adults. It can be given in milk or water, but the best vehicle for it is the syrup of sarsaparilla.

### INTESTINAL WORMS.

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GENTLEMEN :—Time was when worms were considered a most prolific source of disease in children. It is now known that they may be present, in large numbers too, without producing sickness or appreciable symptoms. They are often

found in the dead body when their presence had not been suspected during life. Yet it is certain, also, that they *may* give rise to discomfort and even to alarming illness.

Though very common in childhood, they are not confined to early life; one variety—the tape-worm—is oftener found in adults than in children. Some attach themselves by their anterior extremities to the intestinal walls; others do not; but probably all alike are nourished through endosmotic imbibition of fluids from the intestinal canal.

There are four principal varieties of worms, but only three of them are practically important. They are called in common speech the *round-worm*, the *short* and *long thread-worm*, and the *tape-worm*.

The round worm is technically known as the *Ascaris lumbricoides*. It is from four or five to fourteen inches long, and about the size of a goose-quill. Curiously enough, the female is more than twice the length of the male, with the further advantage of having a strong numerical majority in those instances where numbers are present.

In color, in length, and in size it bears a pretty close resemblance to the earth-worms used for bait in angling, but the extremities are more slender and pointed. This parasite is very frequent in children between the ages of two and ten years. It is infrequent in sucklings, probably because its germs are not present in the mother's milk. It is not very rare in grown people. It is said to be most prevalent in tropical countries, but it is no stranger with us.

Its ordinary dwelling-place is the small intestine, but it is an active and somewhat migratory worm, straying frequently into the stomach, whence it may be vomited, or into or even out of the larger intestine. It has even been known to crawl up the œsophagus and over into the air-tubes; through the common bile-duct into the liver, and through the intestine into the peritoneal cavity. In these situations it may be the cause of fatal inflammations. There are few openings so small that this agile worm will not enter with its slender head and neck, drawing the rest of its body through.

It seldom lives alone. Quite generally there is a little colony of from four to ten. Occasionally the number is much

greater. A hundred, two hundred, even three hundred, have before now been found lying haphazard along the small intestine, or intertwined and wound up into firm balls, large enough in some instances to obstruct the gut.

We are ignorant of the medium through which the germs of this worm enter the body, whether through the water or the food or both; neither do we know the ground of its preference for the intestines of children.

The *symptoms* caused by this parasite are obscure and uncertain. Often there are no symptoms. It is frequently voided when no thought of its presence had been entertained. Many symptoms have been attributed to it, but none of them are conclusive. Sight affords the only certain evidence, unless, indeed, we find the ova by microscopic examination of the *feces*. If, however, a child that has been weaned is fretful by day and restless by night; if it makes frequent complaint of pain in the belly; if it has a fitful appetite or no appetite and an offensive breath, a coated tongue, and tumid abdomen; if it is dark under the eyes and its countenance ashy in hue; if there is nausea and frequent choking as though something came into the throat; if there is occasional fever without apparent cause and a dry cough; if the child rubs its nose and upper lip; if it starts and cries out suddenly and grinds its teeth in sleep; if the eyes squint or the pupils are dilated or unequal, or if there are partial or general convulsions for which we cannot account; if several of all these symptoms were present we would be justified in assuming a verminous origin and in adopting a corresponding treatment.

Continued fevers in children were formerly called "worm fevers." Because the parasites were frequently sickened and driven from the child by the fever they were erroneously supposed to be the cause of it. This term "worm fever" is common yet among the laity, but I think it is certain that worms never stand in a causative relation to continued fevers.

The next most common and most troublesome variety is the *short thread-worm*, or *Oxyuris vermicularis*; also known as *pin-worm* and *seat-worm*. It is a white, maggot-like worm, not more than a quarter of an inch long on the average, and never exceeding a half-inch. When seen in the passages, it reminds



one of bits of white cotton thread. In this variety, as in the preceding, the female is larger than the male. Though insignificant in size it is often present in vast numbers. In some instances the evacuations are actually tremulous like a quagmire from the movement of myriads of these little worms. Sometimes countless numbers of them become matted together into a firm ball, and this takes on a slimy covering of mucus from the intestine. A perverted instinct leads it to choose the anal end of the bowel for its home; but, like the round worm, it is somewhat given to travel, often passing up into the colon, or, in girls, over the perinæum into the vagina. In boys it may find a lodging-place under the prepuce. Like other varieties, it is very rare in nursing children.

There are no general symptoms characteristic of this parasite. If present in force, there are such well-marked local symptoms as crawling, burning, and intense itching in the rectum and about the anus. In the first hours of the night, when the child has got warm in bed, the pruritus is apt to be all but unbearable. Towards morning and during the day it is less troublesome. It is stated by some writers; and I think it quite likely, that when pin-worms infest the vagina or get underneath the prepuce they may cause so much irritation as to lead to onanism.

The *long thread-worm*, or the *Trichocephalus dispar*, is from one to two inches long. It dwells in the cæcum and ascending colon. I only allude to it that you may know that there is such a worm. Though often enough found in the dead body, it scarcely ever appears in the fæces. It gives rise to no symptoms and calls for no treatment.

Lastly, the formidable *tape-worm*, from *tænia*, a band or ribbon. There are two or three varieties, but the differences are not great and are practically unimportant. It is long, jointed, flat, ribbon-like. It is never present in the body in great numbers; probably there are never more than two or three, and seldom more than one. Indeed, the name of the more common variety is *Tenia solium*, from *solus*, alone; from the fact that it is solitary.

The anterior extremity of the tape-worm is very slender, and the head often so small as to be barely discernible. The

features, if we may call them so,—that is, the suckers and the hooklets,—are indistinguishable by the naked eye. The neck is several inches long, and looks like a piece of spool-thread that has been wet and flattened out by a smoothing-iron. At its upper part it has numerous transverse markings; lower in the neck, these markings become the dividing-lines between distinct joints or segments. The entire body of the worm is made up of these pieces loosely united to each other. In form and size they are like gourd-seeds. Each joint is conveniently supplied with a full set of sexual apparatus,—a true hermaphrodite. If separated from the rest of the worm, it is still capable of self-propagation. A single joint may contain thousands of ova, and a single worm may be composed of hundreds of joints. But the ova of the tape-worm, fortunately, do not find in the alimentary canal the conditions necessary to their earlier development. They pass out of the body as ova. If found and eaten by other animals, they may be deposited in the flesh of these animals. After a certain slight degree of development in this situation their growth ceases and they become surrounded by a cyst. In this form they are known as *cysticerci*. Pork, mutton, or beef, and some kinds of fish may contain vast numbers of them. Meat thus diseased is said to be “measly.” If such diseased flesh is insufficiently cooked and eaten, the *cysticerci*, meeting in the alimentary canal conditions that are favorable, may rapidly develop into *tænia*.

This kind of worm is ordinarily from ten or twelve to thirty feet long. Occasionally it is much longer. I had one patient who voided thirty-eight feet at one sitting, and not all of it came then. Its length increases by the development of new articulations from the head, and is limited by the successive dropping of the mature joints from the lower end. These leave the body with the *fæces*, or are voided singly at other times. They do not die at once on separation from the parent worm, but often retain for some time after leaving the body a considerable degree of contractility and power of movement.

The usual dwelling-place of this parasite is in the small intestine. Fastening itself by its head to the mucosa, its body

hangs in the cavity of the gut. Often, as its length increases, it extends into the large intestine. It has even been known to drop itself for some distance out of the anus and after a time to pull back again into its secure abode. Some of your books will tell you that tape-worm is very rare in the young. My reading and experience lead me to think it is more frequent in early life than has been thought. Quite recently I have had two cases in boys of about two years. The *Medical Record* for 1877 makes mention of one in a child of two years. In the same journal for 1879 accounts are given of two cases, one of three years, the other twenty-two months. In the *Boston Medical and Surgical Journal* for 1885 four instances are noted in children ranging in age from six months to nine years. Volume six of the *Obstetric Gazette* refers to a case of tænia in an infant of seven months. In the ARCHIVES OF PEDIATRICS for 1885 account is given of the removal of five feet of tape-worm from a nursing infant of five months. Again, the *Medical Record* for 1871 refers to a case more remarkable than any of the above, reported by Dr. Samuel G. Armour, of Brooklyn, New York. In this case an infant five days after its birth passed well-matured joints of tænia solium. Probably children are as liable to tape-worm as are adults if fed with raw or underdone meats. Both the children that fell under my observation had been often treated with bits of raw bologna-sausage.

From its great length and formidable aspect we would expect this parasite more than all others to give rise to decided symptoms. But it seems not often to do so. Generally its presence is not suspected until the joints begin to escape from the bowel. Its presence once known, the imagination, if in an adult, busies itself in conjuring up symptoms to tally with the possession of so hideous a monster. Then the appetite may become inordinate; there may be abdominal gripings and rumblings and swelling, with insomnia and various nervous disturbances.

*Treatment.*—When there are symptoms that lead us to suspect the presence of worms of any kind, it is proper to act on that suspicion and give some anthelmintic drug. Indeed, the cathartics that are commonly resorted to when the tongue



is coated, the bowels full, and digestion impeded, are more or less inimical to all these parasites.

Then there are several articles that are true vermicides, but not all of them are equally obnoxious to every kind of worm. Some are effective against the round- and thread-worms, but without influence over the tape-worm. It is common and good practice to give the anthelmintics after the bowels have been well emptied, so that they may come in contact with the worm in as concentrated a form as possible.

The best drug to employ against the round-worm is *santonin*, an alkaloid derived from the *Artemisia cina*, or European worm-seed. It has the advantage over most other vermifuges of being tasteless and of being effective in small doses. One decigramme is a fair dose for a child from one to two years old; twice as much for one of three or four years. As it is not in itself laxative, it is well to combine it with some physic. A good plan is to mix it with a teaspoonful or more of castor oil, and give it in the morning for two or three days in succession. I usually give it at bedtime and in the morning, combined with an equal weight of calomel or double its weight of *hydrargyrum cum creta*. If, by the middle of the next day, the bowels have not acted freely, I give some cathartic, as oil or magnesia. If the child rebels against medicine, both the *santonin* and the calomel may be given without its knowledge by dusting on bread and covering with butter. *Santonin* imparts to the urine an orange tinge, and if given too frequently is apt to produce irritation of the urinary passages. It may affect the sight also, making objects appear as if seen through yellow glass. Oil of turpentine is another valuable and very old worm medicine. It is said to be obnoxious to all kinds of worms; it certainly is to all patients. It is much less used than formerly, because equally efficient and less unpleasant remedies have been discovered.

The Carolina pink, or *spigelia*, has been largely used in this country, and is very efficient against the round-worm. The old practice was to combine it with senna as a laxative and to give in infusion. A more agreeable preparation—though I doubt if it is as effective—is the modern fluid extract of pink-root and senna-leaves.

The thread- or pin-worm, dwelling as it does in the lower end of the intestine, may be conveniently assailed by local as well as by general measures. Indeed, the local are the more important. For this purpose enemas variously medicated are much used. Infusions of columbo, gentian, tansy, and garlic; mixtures with quinia, assafoetida, tincture of iron, and salicylic acid; solutions of lime, carbolic acid or salt,—any of these may be used once or twice daily with the syringe and are valuable. Rectal suppositories medicated with a little mercurial or citrine ointment are of service. A German author asserts that two injections of cold water continued for four weeks will invariably expel all thread-worms. Their liability to infest the vagina as well as the intestine should not be forgotten. Whatever local means are resorted to, I think it is well to give an occasional cathartic containing santonin to reach those that may have wandered up above the rectum; for santonin is thought by many to be as destructive to the thread- as to the round-worm. Treatment for pin-worms should be continued for some time after apparent cure, for they tend to very rapid multiplication, and if *any* are left in the canal they will soon reappear in force.

The *tape-worm* is often a difficult animal to dislodge; this is especially true of the *tænia solium*, or “armed pork-worm.” It loves its home, and often clings to it with a grip that taxes the resources of medical art to loosen. Any brisk cathartic may cause a division of the worm and the removal of the lower part, but unless the head is expelled there can be no warrant of success. Accordingly, when tænicides have been given the discharges should always be carefully examined for the anterior extremity. The head is very small and in most cases is not found; but if we recover the greater part of the slender neck we may feel tolerably secure against a return of the trouble.

There are several drugs that have gained for themselves a reputation for the expulsion of tape-worm. Success with any of them depends much on the manner in which they are used. They are best given fasting and after a brisk cathartic. This treatment uncovers and disturbs the parasite and probably weakens it also. I usually direct the patient to go without

supper, or at most to take only a cup of tea with a cracker or part of a goblet of milk. At bedtime I give a cathartic: either oil or calomel or a black-draught; the latter consists essentially of salts and senna. Early in the morning I give whatever vermifuge medicine I have decided upon, the patient still fasting. Two or three hours after I give another cathartic and allow some breakfast. If this course fails to dislodge the worm, I wait for some days before making another attempt.

The drugs commonly used against tape-worm are pumpkin-seeds, kamala, pomegranate-root, kousso, turpentine, and male-fern.

In treating children, pumpkin-seeds have the great advantage of being a most agreeable remedy to take. I have used them in this way: the seeds, freed from the pericarp, are ground or pounded with sugar and made into a thick porridge with milk or water and eaten with a spoon early in the morning. I direct the patient to eat as much as possible; afterwards a cathartic is given. In my practice success with pumpkin-seeds has been rather the exception than the rule.

Probably there is no more efficient tæmifuge than the male-fern. I have used it in quite a number of cases without a failure, though I have sometimes had to make more than one trial. A child of three years may take half a teaspoonful of the liquid extract. The odor and taste are extremely unpleasant, and I have not found it easy to disguise them. Perhaps this formula may do as well as any:

R. Ext. felicis liquidæ, 3-6 grammes;  
Syr. zingiberis,  
Mucil. g. acaciæ, ãã 15 grammes. M.  
Signa.—For one dose.

Another way of giving the male-fern is with hot milk. Some children will readily swallow large capsules, each containing fifteen minims of the drug. Eustace Smith advises the joint administration of male-fern and kamala. About four grammes of powdered kamala is mixed with mucilage; this is triturated in a mortar with a teaspoonful of the liquid extract of male-fern, with water enough slowly added to make



ninety fluidgrammes. One-half is to be given in the morning fasting, the remainder three hours after.

If, after success with your vermifuge treatment, the child is pale and out of condition, you will not forget the value of a tonic course. In many such cases you will be delighted with the effects of cod-liver oil and iron.

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## Current Literature.

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### I.—HYGIENE AND THERAPEUTICS.

Jacobi, A.: *Therapeutics of Diphtheria.* (*Philadelphia Medical News*, June 16, 1888.)

The author first gives the preventive treatment. Each case must be isolated. Remove other children if possible; at any rate, examine their throats daily and take the rectal temperature; do not allow them to go to school or church. Examine the hygienic conditions of the house, and look after the general health of each member of the family, and inspect all such visitors to the family as seamstresses, barbers, etc.

In times of an epidemic all public places, vehicles, railway-carriages, etc., should be systematically disinfected.

As a case of diphtheria infects the room and its contents, so that the patient, when recovering, may have a new attack, the child should change its room and bed every few days.

Public funerals should be prohibited.

Each individual should study prophylaxis, keep the skin and mucous membranes in a healthy condition; all catarrhs should be treated in time: two or three regular salt-water injections (1 to 130) daily are in many cases sufficient, or the addition of one per cent. of alum; but this must be continued for many months in chronic cases. The nasal spray of nitrate of silver (1 to 500 or 1000) will accelerate the cure. Enlarged tonsils must be resected when there is no diphtheria, but avoid wounds in the mouth during an epidemic. Correct glandular swellings around the neck, and all affections of the mouth, throat, nose, etc.

The author recommends chlorate of potassium or sodium as a preventive remedy, being of marked benefit in cases of pharyngitis and stomatitis occurring during an epidemic of diphtheria. He advises fifteen grains in the twenty-four

hours for a child one year old, twenty to thirty grains for a child three to five years old, and not more than a drachm and a half for an adult; give it in small doses frequently repeated.

In the treatment of the case the author declares there is no specific, and each case must be treated on general principles, the temperature, convulsions, cerebral and cardiac symptoms, receiving careful study and attention.

Renal complications are frequent, occur early, and, in the majority of cases, terminate favorably, but it is not safe to depend upon that fact; give milk or farinaceous diet, plenty of water or, better, Poland, Bethesda, Seltzer, Apollinaris, or Vichy, warm bathing, warm feet, a few good doses of calomel, a number of hourly or two-hourly doses of opium (better than digitalis or nitroglycerin), and the case will be benefited.

In the local treatment of external diphtheritic surfaces, the author advises iodol or iodoform in powder, or with vaseline 1 to 8 or 10, claiming better results than with bismuth, boric or salicylic acid.

Diphtheritic conjunctivitis requires only local treatment, ice-bags changed frequently, and the frequent instillation of a saturated solution of boric acid, with or without atropia.

The local treatment of pseudo-membranes of the fauces is a subject of great importance, thus decidedly call for interference, and yet no violence of any kind must be used; rarely can heroic measures be resorted to unless the child be very docile. Often-times nasal injections will so wash off the posterior pharynx and tonsils as to render special treatment of the throat unnecessary. Where it is possible to make local applications, brush the membrane several times daily with tincture of iodine or a drop of rather concentrated carbolic acid. Of powders calomel is the only one that is not contraindicated, but as everything dry irritates, even this may.

The author alludes to papayotin or papain as a solvent of membrane, also trypsin, but commits himself to no opinion as to their value. He favors the use of steam, but not in all cases; it is beneficial in tracheo-bronchial diphtheria, so-called fibrinous bronchitis, where the mucous surface involved is covered by cylindrical or fimbriated epithelium, but where the surface epithelium is pavement, as on the tonsils and vocal cords, steam is of no service, but may cause an extension of the process by softening previously healthy mucous membrane. For medicating the steam the author advises oil of turpentine and carbolic acid, a tablespoonful of the former and a teaspoonful of the latter, poured into the boiling water hourly. He also advises keeping the mucous membranes moist by drinking large quantities of water, or water mixed with alcohol.

He regards pilocarpine as too dangerous.

Diphtheria of the nose is apt to prove fatal because of the large supply of lymph-ducts and blood-vessels on its mucous surface, which cause rapid absorption and general sepsis; disinfectant injections must be begun early, and continued hourly for several days; they will shorten or abort the consecutive adenitis. If the nasal cavity is so filled with membranous deposits that the injections cannot be made, pass a probe wrapped with cotton and dipped in a carbolic acid solution of fifty or sixty per cent.; after a few applications the injections can be used. The fluids injected must be warm and mild; solutions of chloride of sodium, two-thirds of one per cent.; saturated solution of boric acid; one part of bichloride of mercury, thirty-five of chloride of sodium and five thousands of water, or lime-water; or solutions of papayotin. Carbolic acid may be used in solutions of one per cent., or less, but care must be exercised lest the fluid be swallowed. The best syringe is a stout glass one with a soft rubber mounting in front. Where the child cannot or must not be raised, use a spoon or a plain Davidson atomizer. Make the injections hourly, and a single spray on each side will suffice.

The author makes a strong plea that the injections shall be properly made. A towel is placed over the child's chest up to the chin, its head is gently raised so as to rest on the chest of the person making the injection, who sits on the bed; the syringe is introduced horizontally and gently emptied; no time is to be lost in refilling and attending to the other side. If the injection be properly made the fluid escapes through the other nostril, through the mouth or is swallowed, but does not return through the same nostril. When pain is complained of in the ears more gentleness is required, or perhaps the spray, spoon, or minim-dropper will have to be used.

For the adenitis the author advises treating the absorbing surface,—viz., the nasal and nasopharyngeal membrane. Locally, iodide of potassium in three or five parts of glycerin, or in equal parts of water, with a little animal fat and six or eight times its quantity of lanolin, may prove of service. Suppuration requires incision and disinfection with concentrated carbolic acid. If there should be a profuse hemorrhage avoid carbolic acid and solutions of iron, but resort to compression, the actual cautery, or acupuncture.

Heart-failure must be anticipated and everything avoided that will enfeeble the patient; even the mildest cases must be kept in bed and every movement of any kind restricted. The cardiac stimulants must be begun early, not waiting until feebleness and collapse have set in. More especially is their



early use indicated when antipyrin or antifebrin is given. Of digitalis the author advises several grains daily, and in urgent cases gives one or two doses of two to four grains each, followed by smaller ones; he sometimes combines the sulphate of sparteine with it or gives the latter alone,—to an infant one year old one-tenth of a grain four times a day, and in an emergency every hour or every two hours. Of alcohol he gives from three to ten ounces daily, well diluted. Coffee he advises, also camphor; of the last from five to twenty-five grains daily, as camphor-water or in emulsion. For a rapid effect employ subcutaneously in five parts of oil. The camphor does not upset the stomach as ammonium carbonate is liable to do.

Of all the stimulants the author gives the preference to Siberian musk, in powders or with mucilage.

For the paralysis he advises sustaining the strength of the heart by digitalis and other cardiac tonics, a child of three years taking daily for a month three grains or its equivalent, also mild preparations of iron, strychnia, the eightieth of a grain three or four times a day for a child three years old, massage, and the electrical current.

The author urges the use of the chloride of iron, in hourly or half-hourly doses, not only for its general effects, but for its astringent and antiseptic action on the diseased surface; he gives from forty-five to sixty grains to a child one year old, and from a hundred and twenty to a hundred and eighty grains to a child from three to five years old. It is better to combine it with water and glycerin, the latter being better than syrup. The contraindications are vomiting and diarrhœa, those severe cases which require alcohol in such doses that the stomach cannot take care of both the alcohol and iron, and cases of laryngeal diphtheria. The author closes his paper with a reference to the use of the bichloride of mercury; he shows its advantages in all cases, and the decreased mortality rate in those cases requiring tracheotomy or intubation in which this remedy had been used. The doses are from a sixtieth to a fortieth of a grain, the daily quantity being one-quarter to one-half a grain, and continued during a period of from five to twelve days. In connection with this, solutions were used topically as injections or sprays.

Wendt: Recent Views regarding the Pathology and Treatment of Pertussis. (*Phila. Med. News*, June 2, 1888.)

The writer briefly discusses the more recent views, advanced by different observers, regarding the nature of pertussis. In his opinion the bacteriological researches of Afanasieff are far

more important and convincing than any hitherto undertaken. His own experience with the bacillus described by Afanasieff permits him to state that it is probably always present in pertussis. In the few cases in which he failed to find it, the method of obtaining the sputum was very likely at fault. He is unable to confirm the assertion of Afanasieff that the small pellet of mucus which is coughed up at the end of a paroxysm contains the pertussis bacilli in almost pure culture. It has not been his fortune to demonstrate the bacillus pertussis, except in those cases where the clinical features of the disease were already so well marked that a microscopical confirmation was not needed. He had occasion to examine the sputum from a few cases of suspicious cough, that later developed into characteristic pertussis, but in none of them could he find the bacillus of Afanasieff during that early stage.

In regard to the treatment of pertussis, the author does not believe that a specific has yet been found. Of the various medicinal agents used, he regards the bromides and chloral as indispensable in the severer cases. He has feared to use strong solutions of cocaine, and the weaker ones (up to four per cent.) have not given him much satisfaction. Antiseptic sprays have yielded less flattering results than he anticipated after reading the glowing accounts of the successes of others. Antipyrin has served him better than any other one drug. He claims no cures from antipyrin. The drug has appeared to him to favor an easy course of the disease to final recovery, a mitigation of the paroxysms, especially at night, possibly a reduction in their number, and certainly a freedom from complications. In its employment he has followed the directions of Sonnenberger, who gives one-seventh of a grain to very young children, and gradually increases the dose according to the age of the child. The drug is administered, dissolved in a little water and raspberry syrup, three times daily, and sometimes once during the night. The remedy should be continued throughout the attack. He believes good hygiene and judicious alimentation are, in the present state of our knowledge, of, at least, equal importance with medicinal treatment.

**Roese:** Oil of Turpentine in the Treatment of Diphtheria. (*Rev. Mens. des Mal. de l'Enf.* [abstracted], February, 1888.)

During the past four years the author has administered oil of turpentine in sixty cases of diphtheria, the ages in fifty-three of the cases ranging between one and twenty years. In the entire series there were only five fatal cases. The drug was administered in teaspoonful doses three times daily, and

the bad taste was obviated by adding one gramme of ether to each fifteen grammes of turpentine. In addition, a dessert-spoonful of a two-per-cent. solution of salicylate of soda was given every two hours, and during the intervals an ice-bag was kept at the neck, and the throat was frequently gargled with a one-per-cent. hot solution of chlorate of potash. Under the influence of this method of treatment the condition of the patients was modified, and the result was evident in a rapid diminution of the fever and the frequency of the pulse; in a decided diminution in the duration of the disease; in the fact that in most cases the local symptoms remained stationary almost from the time that the treatment was begun; the subjective symptoms, such as headache and difficulty of deglutition, quickly ceased; the dangers of asphyxia no longer threatened, excepting in one case, and in that case tracheotomy was required. Great precautions were taken in administering the drug to anæmic and scrofulous children, and to those who were suffering with heart-trouble.

As tonic a regimen as possible was prescribed, consisting principally of milk, old wine, and soups; iced water was used to quench the thirst. The turpentine was discontinued as soon as there was improvement in the fever and the local phenomena. In most cases not more than twenty grammes of turpentine were required, though as many as sixty grammes were used in several cases. In no case was there any evidence of intoxication from the use of the drug.

A. F. C.

**Legendre: Lactation by Gavage for Premature Infants and Feeble Mature Ones.** (*Rev. Mens. des Mal. de l'Enf.*, April, 1888.)

In those cases in which it is evident within a few hours after birth that the infant has not sufficient strength to suck, one must not hesitate to come to his relief and introduce food into the digestive cavity. According to Tarnier, if the weight of the infant is between one thousand and two thousand five hundred grammes there is usually congenital weakness. There are other indications in addition to lightness of weight by which congenital weakness can be diagnosticated,—for example, a bright and uniform redness of the skin, with unusual transparency, shrill and monotonous, though feeble, cries, and respiratory movements that are scarcely visible. The infant being unable to nurse, the best food which can be given to him is, of course, woman's milk, undiluted. If that cannot be obtained one may give asses' milk, unboiled, diluted with half its volume of distilled water, adding three grammes of sugar to one hundred of the milk and water. If asses' milk cannot



be had, one may use a mixture of one part cow's milk to three of sugar-water. The cow's milk should be boiled, or else warmed for an hour in a vessel placed in another vessel of boiling water. It should be lukewarm when administered. At first one should try to feed the infant with a spoon, giving two or three coffeespoonfuls each time, and feeding at least twelve times in the twenty-four hours. If the child is to be fed by the nose, one must hold it horizontally upon the arms, while another pours it from a coffee-spoon, first into one nostril and then into the other. At first this should be done every hour during the day and every two or three hours at night, three or four coffeespoonfuls being given at first, the quantity being gradually increased to ten or twelve. This method is practicable only when great care is used and when deglutition is properly performed. Therefore it cannot be used with very feeble children. The method of gavage, advocated by Tarnier, is much more generally used and more effective, and consists in holding the infant horizontally upon one's knees, the head being slightly raised; a small soft rubber catheter is then introduced into the mouth and pharynx, and if not swallowed by ordinary deglutition, is forced gently down the oesophagus to a distance of fifteen centimetres. To the distal end of the sound is attached a small glass receptacle containing the quantity of milk which is to be administered, and when the sound has reached the stomach the distal end is raised, and the milk allowed to run into the stomach. The sound is then quickly removed and the child placed in a warm bed. Hypernutrition must be carefully avoided, as it would be likely to cause gastro-enteritis. The gavage should be gradually discarded for the breast as the strength of the child will allow it. By this method of nutrition Tarnier hopes to be able to save infants born a little before the end of the sixth month. A. F. C.

Pierron: *External Revulsive Agents in the Treatment of Diseases of the Lungs in Children.* (*Jour. de Méd.*, February 19, 1888.)

When diseases of the lungs are manifested, it would seem as if routine practice would require the use of a vesicant to the chest, the feet, or the head; and in certain quarters one is not credited with much knowledge if such a plan is not carried out. Not that vesicants are useless in diseases of the lungs; on the contrary, they are the most efficient means of treatment in certain cases. Incidentally it is to be observed that lesions of the skin are regarded as discolorations, vesicles, bullæ, papules, pustules, etc., and when revulsives are used they present lesions which resemble more or fewer of the conditions mentioned,

the skin being more or less changed, and the effect being classified according to the energy of action of the revulsive used.

Heat, either preserved or produced, is the first means for effecting revulsion, and may be produced by covering the chest with a thick layer of cotton, or with cotton plus a flannel bandage. The heat of the body will thereby be retained, perspiration will be encouraged, and an eruption upon the skin will be provoked.

A more active revulsive is the cataplasm, which acts as a mild, warm, and moist topical agent, and favors resolution. The crude essence of turpentine is a more active, more rapid, and more durable revulsive than the cataplasm, and its effect is superior to that obtained by the tincture of iodine. The effect of the turpentine may be prolonged by applying a thick layer of cotton over the chest after it has been used, and its volatility is so decided that the effect upon the lungs will be the more decided the more its vapors are inhaled.

Tincture of iodine is not regarded as a very useful revulsive for children; if the quantity used is small the revulsive effect will be slight, while the use of a large quantity will produce great pain, and may be followed by severe reaction, and even by convulsions in very young children. The inhalation of the tincture of iodine as it volatilizes from the chest will have a favorable influence upon the lung-disorder, the same as the turpentine. Cotton impregnated with iodine tincture may be used upon the chest, or the following mixtures may be prepared:

R Potass. iodati, 1 gramme;  
Potass. iodidi, 10 grammes;  
Aque, 50 grammes.

R Acidi citrici, 10 grammes;  
Aq. dest., 50 grammes.

Sig.—Apply the first freely over the chest, let it dry, then apply the second, and free iodine will be liberated.

The various forms of sinapism constitute the revulsives of the next order of activity, and, as is well known, a powerful effect may be produced with it upon the skin and, by reaction, upon the general condition. For extreme conditions, such as impending asphyxia, in lung-diseases, the effect of sinapisms may be most useful. To obtain the useful revulsive effect of sinapisms without the pain which so often accompanies their use, one may substitute a hot flat-iron, which may be passed rapidly over the chest, protected by a piece of flannel, until a sufficient degree of erythema has resulted. Various forms of vesicating paper are in the market, some of which are service-

able for pulmonary disease in children, while the more violent ones should be avoided.

A. F. C.

The Consumption of Milk in Paris. (*Jour. de Méd.*, February 26, 1888.)

This important question was recently discussed before the Paris Society of Medicine, and its bearing upon the alimentation of infants is of such importance that a portion of the discussion is deemed worthy of reproduction.

Dr. Le Menant des Chenais, though desiring that the milk-supply should be of the very best quality, realized that an attendant evil would be the further diminution in the number of infants who are suckled by their mothers. It must be recognized that the artificial feeding of infants is a social evil, the same as alcoholism and other recognized evils which cannot be made to disappear, though its consequences may be attenuated. Two classes of infants are to be considered, as regards their nutrition,—those who are brought up at home, and those who are brought up at the home of their nurses. It was not believed that half the mothers who nursed their children, especially in the large cities, have sufficient milk for the child's entire subsistence during the first seven or eight months of life. The same is true, though not to the same extent, concerning those children who are fed by wet-nurses, a mixed diet being resorted to before dentition begins. Many mothers choose artificial nutrition for their infants from real or imagined inability to nurse them, and because they do not wish the annoyance of a wet-nurse. In regard to those infants who are brought up away from home, the author's experience in 1879, with one hundred and forty-one children who were thus brought up, showed that only nine were nursed entirely at the breast for at least three months, fifteen had mixed diet (natural and artificial), and seventy-eight had only artificial. It was believed that this was the usual experience of physicians in a similar class of practice. Inasmuch as cow's milk enters into the diet of the greater number of infants from the earliest periods of life, it is always and everywhere important to know where one can get good milk, and how it should be given. It was believed that it had been sufficiently proven that the milk should be used for infants from those breeds of cows which furnished a fine quality rather than a large quantity. The stables should be kept cool, clean, and free from bad odors, and every city stable which is unhealthful for the cows which are kept in it should be suppressed by the health authorities. In the country the milk which is to be shipped to the city should be cooled and aerated as soon as it



is drawn; it should then be superheated *in vacuo*, so that it could be kept for at least two months without deleterious change.

A. F. C.

Leron: Prophylaxis in Connection with Blennorrhœa Neonatorum. (*Jahrb. f. K.*, xxvii. 4.)

The question has been much discussed of late as to the necessity of applying Credé's method (*i.e.*, the use of a two-per-cent. solution of nitrate of silver) *intra partum*. The author examined the vaginal secretions of one hundred and fifty women for Neisser's gonococcus, including one hundred parturient women in his hospital practice, thirty from the better class of private patients and twenty gynæcological cases. In the parturient cases the secretion was taken at the beginning of the second stage of labor, previous to the rupture of the amniotic sac, from the vicinity of the portio vaginalis, the genitals having first been disinfected with a 1 to 1000 solution of sublimate. In fourteen of the one hundred cases there was present a recent gonorrhœal vulvo-colpitis, and the secretions showed numerous colonies of cocci, and similar results were obtained in the twenty gynæcological cases. In twenty-seven of the hospital cases the clinical symptoms were those of inflammation of the entrance of the vagina, granular colpitis, fluor albus, etc., and few cocci were found. In eighty-nine of the cases in which the genitals seemed free from disease the cocci were found in thirty-eight per cent. If the second and third stages of labor were prolonged, infection of the eyes of the infant was found to be possible even if careful irrigation had been performed. In the thirty private cases the vagina was irrigated with a 1 to 2000 solution of sublimate during labor, and the eyes of the new-born infant were carefully wiped with clean cotton. In the hospital cases there was no vaginal irrigation, but the two-per-cent. solution of nitrate of silver was instilled into the eyes of the infants. Not one of the latter suffered from blennorrhœa neonatorum, while of the former five had a mild attack on the second day after birth. The mothers in the latter cases were primiparæ, the second and third stages of labor had been prolonged, and gonococci had been found in the vaginal secretions. Gonococci were also found in the secretions from the eyes of two of these five infants. In one of the cases the silver solution was instilled into only one eye, and the other suffered blennorrhœa. Credé's method, therefore, may be considered entirely satisfactory by the results of this investigation. Instead of using one drop of a two-per-cent. solution for each eye, two or three drops of a one-per-cent. solution may be used with equally good results.

A. F. C.

Ehring: Salicylate of Bismuth in the Treatment of Disease in Children. (*Jahrb. f. K.*, xxvii. 4.)

Merck's preparation of salicylate of bismuth was used, which contains sixty-three per cent. of oxide of bismuth. The author made careful observations in one hundred cases, including dyspepsia, acute and chronic gastric catarrh, gastro-intestinal catarrh, intestinal catarrh, enteritis, dysentery, etc., the children being of all ages to ten or twelve years. The bismuth was given with water, 1 to 20, with 10 to 20 parts of glycerin, syrup, or mucilage, and an equal quantity of red wine; it was given in teaspoonful doses every two hours. Troublesome flatulence, accompanied with bad-smelling gas in the intestine, was relieved by this treatment. Constipation is not a contraindication to its use. It has been satisfactorily shown that the salt is quickly broken up after its ingestion and reabsorbed, salicylic acid not being found in the feces. Symptoms of intoxication from this drug were never seen, but it should not be given in the form of a powder, as it might cause ecchymoses upon the gastric mucous membrane.

Solger, who experimented with this drug, observed that in cases in which there was poor nutrition, and also constipation, with general *malaise* and coated tongue, the use of this drug caused pain in the stomach and abdomen, the tongue became dark gray in color, and finally there were symptoms of salicyl intoxication.

All accounts tend to show that while this drug is no *panacea* for gastric and gastro-intestinal catarrh, it is sufficiently valuable to be of service in many cases. It was often found that the results were better when this treatment was combined with irrigation of the stomach and intestines. No unpleasant results followed the proper use of the bismuth even for long periods. The fact that the urine is strongly acid during this treatment suggests that the drug may be of value in the treatment of cystitis.

A. F. C.

Kolischer: Experience with the Calcium Treatment in Local Tuberculosis. (*Jahrb. f. K.* [second communication], xxvii. 4.)

This account was written after the author had treated about five hundred cases by his method. He believes, as a result of this experience, that this method of treatment for local tuberculosis in children is a good one; that it often results in cures and a return of the affected parts to functional activity. The calcium gauze proved an excellent dressing after extensive operations upon carious bones. It is not entirely satisfactory in cases in which the tuberculous deposits are very deeply

situated. For external deposits, as in tuberculous glands in phthisical patients, it does not cure, but only purifies the parts and causes a diminution of the secretions. For children approaching the age of puberty the prognosis from its use is almost always good. In older persons whose general condition is not good the period of treatment should be prolonged, and success does not come in from one-third to two-thirds of the cases.

Since the foregoing was written additional experience compels the author to limit the applicability of his method of treatment to a still smaller range of cases. Failures are due in some cases to improper observance of the details which are necessary to insure success. One of the greatest objections to the method is that localized gangrene sometimes follows the injections. In the effort to saturate the tuberculous mass with the injection material the punctures are sometimes made at too small intervals of space, and the tissues have not sufficient vitality to resist the destructive influence of the solution. On the other hand, if too small a quantity is injected the effect upon the diseased tissues is not sufficient to result in a cure. In children the results have been more satisfactory than in adults.

A. F. C.

**Simon: Treatment of Eclamptic and Uræmic Convulsions in Children.** (*Gaz. Méd. de Paris*, March 3, 1888.)

The author lays down as a primary proposition that in every case of eclampsia in a child one should first inform himself of the condition of the urinary secretion. In eclampsia the secretion of urine is entirely suspended, though a small quantity of urine, which may have been in the bladder, is sometimes ejected under the influence of the convulsion. As soon as the discharge become quite abundant the evidence is sufficient that the kidneys are at work again, and then active treatment can be discontinued. The abundant discharge of urine in eclampsia, as in many other disorders of the nervous system, is a critical phenomenon, which announces with certainty the approaching termination of the attack, though there may be a few more spasms before the attack is entirely ended. Since dyspepsia is the most common cause of eclampsia among children, a wise arrangement as to diet and hygiene is the most useful form of prophylaxis. Children, especially the more excitable ones, should also be spared as far as possible the conditions of extreme excitement which are so prevalent in modern society. The prophylactic measures against cerebral irritation may be summed up in the one word isolation. Simon does not endorse Trousseau's plan of avoiding all ac-



tive treatment for convulsions. To Trousseau's objection that mustard-baths and similar means only irritate the patient, the reply is made that children in convulsions are completely insensible and unconscious, and hence the therapeutic means which are used cannot produce irritation. First of all, one's attention should be directed to the alimentary canal; an enema with glycerin or any other appropriate agent should be given, then vomiting should be excited by tickling the throat, or by administering a suitable quantity of syrup of ipecac, with powder of ipecac during an interval between the spasms. If these means are not effective, an enema may be given composed of,—

Sodæ sulph., 30 grammes;  
Fol. sennæ, 8 grammes;  
Aquæ, 200 grammes;  
Mel. hydrarg., 100 grammes.

If the attack still persists, inhalations of chloroform or of ether should be used, and these inhalations may be continued for hours if necessary. In the mean time, an enema may be given consisting of,—

Chloral hydr., 1 gramme;  
Tinct. moschi, gtt. xx;  
Aquæ, 50 grammes.

This should be administered in two doses by means of a glass syringe. If after this treatment the attack still continues, a mustard-bath should be prepared at the temperature of 38° C., into which the child must be immersed. This will produce fluxion to the skin, and diminish the circulatory troubles which always accompany eclampsia. When the paroxysms have diminished and the child is able to swallow, the following formula should be prepared:

R Potass. brom., 1 gramme;  
Moschi, .10 gramme;  
Aq. "cherry-laurel," 15 grammes;  
Syr. codeine, 5 grammes;  
Syr. flor. auran., 30 grammes;  
Julip. mucil., 100 grammes.

Of this a coffee-spoonful may be taken every fifteen or thirty minutes, or every hour, according to the intensity of the spasm. Should the attack still continue, a vesicant three centimetres by six should be applied to the nucha, and allowed to remain three hours; the wound should then be dressed with starch-poultices or other suitable dressing. Should the eclampsia be due to uræmia, the only remedy which will act rapidly and efficiently is bleeding. In children two to three years of age this may be accomplished by placing a leech behind each

mastoid process; for older children five or six wet cups may be used in the region of the kidneys. In addition a hot-air bath may be given. To this treatment may be added the use of chloral, bromides, etc., as indicated. A. F. C.

## II.—MEDICINE.

Vacher: Is Summer Diarrhœa in Children one Disease or several? (*Arch. f. Kinderh.* [abstracted], ix. 3.)

Considering the fact that diarrhœa is a symptom which is unusually common in many diseases, and in some is the principal symptom, the question has suggested itself whether there is a specific disease which should be designated as summer diarrhœa. The important rôle which is played in the statistical returns by diarrhœa is seen in the fact that in the registrar-general's returns for England and Wales in 1883 the deaths from diarrhœa were fifteen thousand and ninety-nine, in 1884 they were twenty-four thousand nine hundred and eighty-eight, representing respectively more than one-third and more than one-half of the deaths from the principal diseases which were fatal among children. These figures must excite a suspicion that many different diseases have been designated diarrhœa which should be more closely investigated. The following propositions are submitted by the author:

(1) Summer diarrhœa is limited, as a cause of death, almost exclusively to small children, especially to the children of the laboring classes.

(2) The mortality from diarrhœa is greater in the cities than in the country.

(3) In many cities there is a constant low or a constant high mortality-rate, while in others the rate fluctuates within wide limits.

(4) The mortality from summer diarrhœa has no fixed relation to the density of the population.

(5) The mortality from summer diarrhœa increases with the increased elevation of the temperature, but is influenced very little by the rainfall.

(6) Several deaths from summer diarrhœa do not often occur at the same time in the same house.

(7) Houses in which these fatal cases occur are not necessarily old or unsanitary; on the contrary, they are frequently new, neat, and in isolated situations.

(8) In very many cases diarrhœa is accompanied with spasms.

(9) The duration of the disease varies from two days to three months.

The foregoing are conclusions drawn from the author's experience, and convince him that diarrhoea is not an infectious disease. If from the great number of cases of so-called summer diarrhoea the cases of probable typhoid fever, tubercular meningitis, dysentery, etc., were eliminated, there would still remain a considerable percentage of cases of true summer diarrhoea, and these cases could be studied with greater accuracy if the others were excluded.

In the discussion of this paper it was observed that the condition and quality of the milk had much to do with the prevalence of summer diarrhoea, and that very slight changes for the better in its quality often had a striking influence in checking the continuance of the disease. Among the Irish people typical summer diarrhoea is practically unknown. Many of their children are not fed with milk, but with oatmeal and water, bread and water, and oatmeal gruel.

A. F. C.

T. Colcott Fox: A Peculiar Eruption of Comedones in Children. (*Lancet*, April 7, 1888.)

These comedones, indistinguishable from those seen after puberty, first come on the forehead close to the hairy scalp. The whole forehead may be covered. The outline of the areas involved is usually sharply defined, and almost every follicle over the area involved is blocked. Frequently an acne results, its intensity depending upon the nutrition of the children.

The disease is more common in crowded parts of towns, and frequently several cases occurred in the same family.

The greatest frequency was between the fifth and seventh years. Although the writer is able to present no statistics upon the point, he states it as his impression that the disease is much more common in the spring months; some children having attacks every spring. Their development is usually gradual, but they sometimes come quickly, and disappear almost as suddenly.

It is not associated with any ill health. There was subsequent return of the symptoms, and death in February from asphyxia.

The etiology is obscure; but the writer is inclined to its parasitic origin. Masses of spores were found at the distal end of comedones from one case which closely resembled trichophyton.

The treatment is simple: to remove the plugs by the use of alkaline and stimulating applications, and thorough shampooing. This will also prevent their recurrence.



W. Pasteur: Congenital (?) Obliteration of the Left Internal Jugular Vein; Chronic Pleurisy; Autopsy. (*Lancet*, February 11, 1888.)

A boy two and a half years old was admitted to the hospital in October. A history was given of persistent dyspnoea since pneumonia when eighteen months old. His face was cyanosed and extremities livid, but not swollen; the fingers were slightly clubbed. There were râles in the chest, and the left lung was somewhat collapsed, and the heart was enlarged. The liver was much enlarged.

The case was regarded as one of old pleurisy with pulmonary collapse, bronchiectasis, and probably enlarged bronchial glands.

There was some temporary improvement, but in December all the symptoms were aggravated. The face was deeply cyanosed and swollen almost beyond recognition.

The external jugulars were not distended, but the left facial was very much so. The œdema later affected the feet. The dyspnoea becoming urgent, venesection was employed with temporary relief, and then short incisions were made over the malleoli, greatly relieving the œdema, not only of the extremities but of the head and neck. The arms were not œdematous.

The autopsy showed the middle third of the left internal jugular occluded by a firmly adherent and organized thrombus. The lower third was obliterated and reduced to a fibrous cord.

Nothing pathological was found in the surrounding tissues, and no explanation discovered of the lesion in the vein.

There was no valvular disease of the heart, but hypertrophy with dilatation. The left lung was shrunken and the right hypertrophied.

Cordier: An Epidemic of Infantile Atrophic Paralysis. (*Rev. Mens. des Mal. de l'Enf.* [from *Lyon Méd.*, January and February, 1888], April, 1888.)

The cases which are detailed in this paper show that infantile paralysis, the etiology of which is so little understood, may be located in the cells of the anterior horns, may begin as an epidemic, and that it is a specific, infectious, probably microbic disease. Thirteen cases of this disease were observed in one locality, in the months of June and July, 1885, in a district containing fourteen hundred to fifteen hundred inhabitants. Four of the children died, their symptoms being the same as those of the ones which recovered. The age of the patients was from one to thirty months, boys and girls being attacked in about equal numbers and equal severity. In almost every case the health of the child was good before the

onset of the disease, which was without premonitory symptoms. The fever was variable; in most of the cases it was violent, having an apparent relation to the extent of the medullary lesions. In half the cases there were convulsions, and this without reference to the gravity of the other symptoms. In most of the cases there was profuse sweating during the entire febrile period; it was absent, however, from the four fatal cases.

Paralysis was present in several cases after the second or third day, in the lower extremities alone or in all four at the same time. In some the muscles attached to the nucha were not able to sustain the weight of the head, in others the lesions were yet more profound, the infants being unable to nurse or to cry. In these severe cases the lesions were not limited to the cord, but extended to the bulb, the gray nuclei of the ventricles being probably involved in the fatal cases. In the four fatal cases death came at the end of the third day, the patients being the youngest in the series. In those which were followed by recovery, paralysis did not disappear with equal rapidity in all; it would appear during the summer and then remain stationary during the winter. In favor of the infectious origin of the disease are the facts that its phenomena appear almost exclusively during the summer, its cyclical progress, and the limitation of the lesions to certain foci, which are always the same. The infectious agent cannot be either the food or the drink of those infants who are nourished exclusively at the breast, and, as there are no cutaneous lesions, it seems possible that the infection may be received by the respiratory passages through the medium of the atmosphere. The period of incubation may be no more than eight hours, and it has not been observed to exceed thirty-six. The facts at hand are sufficient to warrant the possibility of contagion in this disease, and a corresponding degree of care and caution.

A. F. C.

W. H. Thomson: Diphtheritic Paralysis. (*Phil. Med. News*, June 9, 1888.)

The author prefaces his paper with the claim that the so-called sequelæ of the acute infectious diseases are in reality the late manifestations of the disease, belonging to what he calls the third or "post-latent" stage. For he divides these diseases into three stages: a pre-latent, a stage of development, and a post-latent. Into this third stage he relegates the nephritis of scarlet fever, the relapses of typhoid, the persistent bronchitis, otitis, and endocarditis of measles, and the acute articular rheumatism that sometimes follows mumps and

suppurative tonsillitis. The disease, he says, is still in force though the thermometer has ceased to detect it.

Diphtheritic paralysis, then, is the third stage of diphtheria, and in some cases the only stage giving marked symptoms of the disease. It is distinguished by the separate rather than the progressive character of its manifestations, involving new tracts while leaving those that it first attacked. This peculiarity gives it a semblance to hysteria, but no disease has less the characters of the functional paralyses and more those of the organic; on the other hand, in contrast with organic paralyses, it begins generally with just those signs with which the worst organic forms end,—viz., with apparently bulbar symptoms. After illustrating this point by citing some of the clinical manifestations, the author discusses the nature of the disease.

He remarks that the coincidence of motor and sensory paralysis in limited localities which are yet supplied from both sides of the brain and cord would indicate that the lesion was peripheric and not central.

There may be only a motor paralysis or only a sensory paralysis, but in the palate there will be both: it will hang inert and insensible. Formerly this was accounted for by the local inflammation, but as the same thing occurs with diphtheritic conjunctivitis, that theory is not tenable; instead, it shows that there is a morbid process involving the peripheric nerves and not the nerve-centres. The paralysis of the power of accommodation of the eye, however, is difficult to explain on the hypothesis of peripheric rather than centric origin.

In about half the cases of palatine palsy, the legs are next involved and then the arms. The leg movements differ from spinal paraplegia in being stiff and spreading and dropping heavily to the floor. Less frequent paralyses are those of the laryngeal muscles,—those supplied by the superior laryngeal nerve being oftener involved than those of the vocal cords.

Paralysis of the muscles of the neck and trunk is often so marked that the head cannot be held up or the trunk balanced or moved.

In a few cases the intercostal muscles and diaphragm are affected and respiration impeded. In some cases the muscles of the eyeball are implicated, most commonly the external recti. The author referring to the sensory paralyses shows that they are just as varied as the motor, and may exist without any motor weakness whatsoever, but he says it is a significant fact that the anæsthesia of a limb is more pronounced as we approach the extremities of the limb, being greatest in the toes and ends of the fingers.



Hearing is exempt, but taste, smell, and sight may be involved, though the optic nerve itself is not apt to be affected. The muscular sensory nerves may be involved even though the cutaneous sensory nerves escape. The vaso-motor and trophic nerves are exempt, the skin of the paralyzed part is neither glossy, oedematous, mottled, nor the seat of ulcerations or eruptions, and though there is occasionally a transient atrophy of some muscles, all trophic changes are conspicuous by their absence.

Of all the changes due to diphtheritic paralysis the most characteristic is the absence of knee-jerk; this not only belongs to the paralysis, but to the diphtheria itself, and some authorities claim it to be a valuable diagnostic point. From a study of the clinical features, then, the author concludes that diphtheritic paralysis is due to a peripheric and not a centric nervous disorder, because it is so difficult to conceive of the central nuclei being primarily affected in many cases of diphtheria without their closely contiguous or associated nerve-centres becoming also involved, as they are in all other nervous affections when the centres in question are affected. Also, that it is not due to any inflammatory affection of the peripheric nerves. The author does not regard parenchymatous neuritis in diphtheritic paralysis as a neuritis at all, but as a primary degeneration of the nerve-elements distinct from inflammation; interstitial neuritis, he says, is a true neuritis, and while nerve-degeneration does occur from interstitial neuritis as a result, it is not the primary or essential process of the affection.

Lastly, that from the start diphtheritic paralysis is characterized by paralysis of reflex impressions, as is notably shown in the palsied palate. The author in treating of the pathological anatomy shows that the nerve-changes are similar to those in descending Wallerian degeneration, in which there is segmentation of the myeline, multiplication of the nuclei in the sheath of Schwann, and disappearance of the axis cylinder without any signs of interstitial inflammation. In some cases of long standing the process travels up the nerve-trunk for a short distance, then seems to skip to the root, and passes into the horns of the gray matter. Congestion and even hemorrhage about the anterior nerve-roots occurs in some cases, and in others infiltration of the nerve-sheath with micrococci.

The muscular changes consist of irregularly-distributed granular and fatty degenerations, affecting especially the heart. As regards the special agent which causes diphtheritic paralysis, the author believes it to be a definite poison or ptomaine generated by the peculiar organism that produced the diphtheria, and thinks that the necrotic and gangrenous lesions

produced by the diphtheritic inflammation, as well as the non-infectiousness of the paralysis, support this theory of a ptomaine.

The author offers little in the way of treatment. The disease tends towards recovery, though slowly, and it is only specially dangerous forms, as paralysis of deglutition, etc., that call for any special treatment. Strychnia and electricity are disappointing; topical applications are better. The author uses a paste of black pepper and honey in palatine and pharyngeal paralysis, painting it over the parts. Parenchymatous neuritis requires stimulants, and he packs the part twice daily with infusion of capsicum, one drachm of the powder to the pint of boiling water, the application lasting from ten to fifteen minutes.

His favorite medicine is tr. phosphor., teaspoonful t. i. d. if the kidneys are free.

For accumulation of mucus in the bronchi use the posture treatment, holding the head low over the edge of the bed and coughing.

For cardiac failure during the diphtheria itself use alcohol, but never digitalis; for that during the paralysis remember the possible myocarditis and give iron, at the same time keeping the patient on his back and as much as possible in the open air.

**Schweinitz: An Examination of the Eyes of Fifty Cases of Chorea in Childhood.** (*New York Med. Journal*, June 23, 1888.)

An examination of the eyes of fifty choreic children, made by the author, in his opinion, seems to justify the following conclusions:

1. The irides of choreic children quite commonly present chromatic asymmetry in shade, just as the same condition has been found in other forms of nervous disorders.

2. Slight differences in the width of the pupils may be observed, but not more frequently—in fact, not as frequently—as these have been noted in perfectly healthy individuals.

3. Facial asymmetry is present in about one-half of the cases, just as this is present in cases of high refractive error, and also in individuals perfectly free from nervous disorders.

4. Hypermetropia and hypermetropic astigmatism are vastly the preponderating conditions of refraction in the eyes of choreic children, being found in about seventy-seven per cent. of the cases, exactly as hypermetropic refraction is the preponderating condition in childhood generally, being found in seventy-six per cent. of the eyes of children in the elementary school years.

5. Imperfect equipoise of the eye-muscles is found in the great majority of the cases, but imperfect equipoise of the eye-muscles is very frequently present in the eyes of school-children free from chorea or neuropathic tendencies.

6. Embolism, atrophy of the disk, and optic neuritis may occur during or after attacks of chorea, but appearances in the fundus oculi characteristic of the disease have not been found.

7. As Octavius Sturges remarks, "It seems certain that a fairly constant proportion of chorea is directly connected with what may be called injudicious schooling, . . . but such nice adjustment as shall prevent overstrain on the one hand and overindulgence on the other is practically unattainable." Certainly an endeavor to lessen the overstrain of the eyes should be made. Hence the refraction errors and muscular defects in these children should be carefully and fully corrected by glasses, by prisms when necessary, or even by judicious surgical interference, and thus a probable exciting element removed; just as we should perform the same service for eyes similarly afflicted in children who are not choreic; just as we should improve the hygiene, remove the anæmia, treat the circulatory apparatus in children who are choreic. Evidence, however, seems quite as lacking that hypermetropic refraction is the basal cause of chorea as it is that the chorea is the cause of the hypermetropia.

Dodge: Malarial Fever in Children. (*Phil. Med. Register*, May 26, 1888.)

The author claims that intermittent and remittent fevers of malarial origin are not rare diseases in children, but they present symptoms different from those seen in the same diseases in the adult and which might lead to a wrong diagnosis.

Intermittent fever in children under two years is usually quotidian; beyond this age, tertian. In young infants the paroxysm has three stages; a baby rarely shakes, instead lies unusually quiet, its lips and fingers livid, other portions pale, hands and feet cold, seemingly on the verge of collapse. Every case is not as severe as this, often the fever being the first symptom. In the second stage the pulse runs up to 120 or 140, and the temperature to 103° or even 108° F. The face is flushed or red spots appear on the cheeks, the skin is dry, there is great thirst, and the child suffers pain in the head and limbs. This stage lasts from two to eight hours. The third or sweating stage is not pronounced, and may not exist at all. In the interval the child appears well except for a slight weariness. The author places great stress upon ab-



dominal pain as a symptom of both the intermittent and remittent varieties. Splenic enlargement is present in some cases, but not as frequently as most writers assert. "Ague-cake" is found in old cases that have not had proper care. Eclampsia may occur as a complication.

In the remittent variety the chill is often wanting, the child merely complaining of feeling cold. The fever soon follows, becoming continuous, with slight exacerbations in the latter part of the day, and accompanied by pain in the stomach, nausea, and often vomiting, the vomited matter being more or less bilious, tongue coated, breath foul, bowels constipated, urine scanty and high colored, and great thirst, while anorexia and a dry, hacking cough are common symptoms,—in severe cases, delirium. The gastric symptoms may persist for days. The author after a long experience advises the following treatment: a small dose of calomel with a few grains of soda, followed by castor oil or rhubarb and magnesia. After the gastric symptoms are relieved he gives quinine, proportioning the doses to the age,—for a child two years old, one grain of the sulphate three or four times a day. Other symptoms are treated as they arise, restlessness or insomnia with bromide of sodium or small doses of Dover's powder.

Gowers: Birth Palsies. (*Lancet* [Clinical Lectures], April 14 and April 21, 1888.)

This term is preferred by the writer to the more vague one of "obstetrical paralysis."

Palsies of *spinal* origin are exceedingly rare. One is recorded in which the cord was lacerated by a French midwife using traction in a foot presentation.

There are, then, two main classes of birth palsies, the *peripheral* and the *cerebral*.

The most common varieties of the former are that affecting the upper arm and that of the face. The facial nerve is injured only by the forceps; the nerve being compressed just as it emerges from the bony canal, all parts of one side of the face are motionless. The nerve injury is rarely severe, for the parts recover in almost all cases after a few days or weeks. The injury to the nerves of the arm may be associated with fracture of the humerus; such paralyses are irregular in their distribution, varying with the nature of the injury. In other cases and more commonly the injury is inflicted at one spot,—just in front of the edge of the trapezius. This may be due to the forceps, the traction-hook, or the finger employed in extracting in breech cases.

The muscles which suffer in such cases are the deltoid,

biceps, and supinator longus, with sometimes the infra- and supra-spinatus. This is called paralysis of the "upper arm type" by Erb, who first described it, and pointed out the relation of the lesion to the spot injured.

Wasting with the reaction of degeneration in the paralyzed muscles follows severe injuries, but in most cases the paralysis is not permanent.

Cerebral palsies are more common and more likely to be lasting. In most cases there is a history of difficult labor, often the forceps being used; in many instances the head shows externally unmistakable signs of the compression it has undergone. Convulsions sometimes occur in the first few days, showing a morbid state of the brain; these may be general or local, and in the latter case may have been accompanied by distinct loss of power. Most of these children are first-born. This was the case in sixteen of twenty-six cases, which is three times the common frequency. In the remaining ten cases the head in six was born last. In two of the remaining four cases there was great difficulty in delivery.

All of these facts suggest strongly that the symptoms result from injury to the brain during birth.

The results of the investigations of Dr. Sarah J. McNutt are quoted with reference to early post-mortem appearances. Extravasations are found on the surface of the brain, the layer being usually thickest over the central region. The cortex may be lacerated. In some cases the extravasation occurs at the base, and then the cerebellum is usually lacerated, the blood coming apparently from its vessels.

The condition found in children who die later in life is an atrophy of the convolutions in the central (motor) region. The cortex here is depressed often to the same degree upon both sides of the median line; the depressed convolutions are small and indurated less than half the normal size.

*Symptoms.*—There is often a bloody tumor of the scalp, indentation of the skull, or some other external sign of injury. Resuscitation may be difficult. General convulsions or general rigidity for some days are rarely seen, because cases with severe lesions do not live long. In the milder cases no special defect is noticed in early infancy, and when the child is old enough to walk or talk the symptoms are first noticed, attention being called to the limbs. They are frequently found rigid, sometimes in flexion, sometimes in extension, sometimes in strong adduction. The trouble in the arms is usually of a different type, there is inco-ordination, and spontaneous movements are sometimes slow and athetoid in character, sometimes resembling chorea, and more rapid. Voluntary movements are inter-

fered with by the spasm and the inco-ordination. There may be complete immobility of one or more of the limbs.

The muscles of the neck and trunk are weak, so that the head cannot well be supported or the child sit upright.

De-glutition occasionally is interfered with, and also articulation may be. Internal strabismus is often present. Mental defect exists in more than half the cases. There may be idiocy. Usually the symptoms are bilateral, but not necessarily so. They may be hemiplegic in type, the arm being the worse. More often the legs are only or chiefly affected. The symptoms then resemble spastic paraplegia, differing from that due to disease of the cord in that there is more adductor spasm.

Recurring convulsions are not common, but they may be present, and the patient become epileptic.

The preponderance of symptoms in the lower extremities is explained by the fact that the lesion is more marked near the longitudinal fissure and in the paracentral lobule. It is rare that all the cortex cells here are destroyed, and hence some power of motion is usually present. The arm-centres lying farther away are less compressed.

*Diagnosis.*—The important points to establish are that there is no history of definite onset after birth, and that the disease is not progressive. Birth palsy is rarely strictly unilateral, which will suffice to distinguish it from “acquired” hemiplegia; moreover, the latter usually comes on with distinct and well-marked symptoms.

From spastic spinal paralysis it is differentiated by discovering that in birth palsy the hands, on close examination, will be found to be more or less affected.

The author has never seen in a young child a primary chronic cord lesion such as in adults often produces a condition of the legs resembling these cases of “congenital paraplegia.”

When the lesion is slight and the child able to walk, the awkward gait may be confounded with that of pseudo-hypertrophic paralysis. But in the latter disease the contraction of calf-muscles cannot be overcome, for it depends upon structural shortening, while in birth palsy it is only from spasm of the muscles and readily yields.

There is no trace in birth palsy of the peculiar condition of the shoulder-muscles seen in pseudo-hypertrophic paralysis,—*i. e.*, large infra-spinatus and defective pectoralis and latissimus dorsi, nor is there lordosis. Lastly, and most important in birth palsy, the knee-jerk is excessive, and cutaneous stimuli excite reflex spasm; in the other disease the



knee-jerk is never increased, it may be diminished or lost, and no peripheral impression causes reflex spasm.

*Prognosis*.—There is no tendency to go on from bad to worse, but, on the contrary, to slow improvement.

In almost all cases where there is not actual idiocy the power of walking is ultimately acquired, although very late, it may be. The more mental the more motor impairment as a rule.

No opinion as to the ultimate condition can be given in a case under two years old, since before this time it is difficult to estimate the amount of the lesion, nor before this can slighter defects be recognized with certainty.

*Treatment*.—Since the lesion includes destruction of brain-tissue, therapeutic measures are limited. Drugs are useless except to control convulsions.

The chief treatment is training the motor powers by gymnastic exercises.

When there has resulted considerable equinus, cutting the tendo Achillis should not be done, for no permanent benefit results. Electricity, whether faradism or galvanism, is useless. Frictions seem to have better results, and should be employed.

**Dentition in Idiotic and Backward Children. Anomalies of the Genital Organs in Idiots and Epileptics.** (*Le Concours Méd.* [editorial], February 25, 1888.)

The following conclusions appeared in the recent thesis of Madame Alice Sollier:

Idiocy with or without epilepsy predisposes to arrest of development, to anomalies and lesions of the dental apparatus in ninety-one per cent. of cases.

The first dentition is affected in the same manner by congenital as by acquired idiocy,—that is, only to a slight degree,—the lesions being limited almost entirely to the secondary dentition.

Precocity in the first dentition of idiots was observed eight times in sixty cases.

Delay in the first dentition of idiots was observed in about a quarter of the cases, whether it was attended by epilepsy or not.

Precocious loss of the first teeth occurred in one per cent., delayed loss in eleven per cent. of all cases examined. The second dentition was delayed in idiots in nearly fifty per cent. of cases, in epileptics in twenty-five per cent. The teeth were abnormally small in fourteen per cent. and large in eleven per cent. of cases, and there were other abnormalities of form in fifty-three

per cent. In eleven per cent. of cases more or fewer of the second teeth did not develop; in some cases in which the teeth were very large it was evident that two contiguous teeth had been fused together. Supplementary teeth were found in only two per cent. Anomalies of implantation were found in thirty-four per cent., anomalies of direction in eighty per cent., especially with the canines and incisors.

In those cases in which there were erosions upon the teeth convulsions were frequently an associated symptom.

Idiocy, with or without epilepsy, may be associated with erosions.

Furrows and notches were presented in a large percentage of cases, and were associated with convulsions.

Articulation was defective in forty-three per cent.

The arches of the jaws were defective in thirty-eight per cent., the palatal arch in thirty-five per cent.

Complete idiocy may be present without any lesion of the teeth.

Bourneville and Sollier investigated the genital organs of seven hundred and eighteen idiots and epileptics and found that anomalous conditions were frequently present, being more frequent in idiots than in those who had become epileptic. Atrophy of the testicle was somewhat more frequent upon the left than upon the right side.

Physical and intellectual degeneration resulting from epilepsy seemed to have an influence in producing varicocele; this latter condition was rarely found in idiots who were not epileptic.

In those cases in which epilepsy existed from the earliest period of life the arrest of development was much more marked than in those in which it supervened during youth; the effect was particularly noticeable in the genital organs.

Idiots with or without epilepsy frequently showed a peculiar deformity of the penis, which was not the result of masturbation; it being clear that some of them, at least, had never masturbated. Of two hundred and ninety-nine thousand two hundred and seventy young men who were examined for the army in 1886, two hundred and fifty-five were exempted for anomalous conditions of the urinary organs, six hundred and eighty-four for varicocele, seven hundred and fifty-three for hydrocele and disease of the testicles, and one hundred and twenty-two for other diseases or faults of the urinary apparatus; in sixteen hundred and eleven others there was sufficient deformity of the genito-urinary organs to take them off the active list of the army. Among the seven hundred and eighteen idiots referred to in the foregoing the proportion of

deformities in the genito-urinary apparatus was four times as great as in the recruits before mentioned. A. F. C.

Galezowski: Rubeola may sometimes have Phlyctenular Kerato-Conjunctivitis for its Initial Symptom. (*Rev. Mens. des Mal. de l'Enf.*, February, 1888.)

A number of cases are detailed in which the statement made in the title of this paper seems to be sustained. Analogous cases have been observed by the author in public and private practice. He therefore concludes:

1. That ophthalmia very frequently accompanies rubeola, and that the ocular affection most frequently appears when the eruptive disease is declining;

2. That the principal characteristics of this ophthalmia are catharrhal inflammation of the conjunctiva and more or fewer phlyctenæ on the side of the cornea and the kerato-conjunctival limbus;

3. That rubeolic ophthalmia sometimes begins a long time before the other phenomena of rubeola have made their appearance;

4. That in exceptional cases rubeola may be manifested exclusively by ocular phenomena accompanied with fever, no trace of cutaneous eruption being apparent. A. F. C.

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### III.—SURGERY.

Lucas: Inversion and Inflation in the Treatment of Intussusception. (*Arch. f. Kinderh.* [abstracted], ix. 3.)

Surgical treatment is called for in cases of acute intussusception not less than in cases of strangulated hernia, and the former condition is by no means an uncommon one in children. The symptoms of this condition are, (1) vomiting, (2) constipation, (3) bloody discharges from the anus, (4) the presence of a tumor, which can be felt through the abdominal wall and occasionally through the rectum. If these symptoms are present they should be obviated by mechanical means; purgatives may make the conditions more unfavorable, and the same may be said of opiates. On the other hand, the work of the surgeon should be performed before disturbances in the circulation and inflammatory exudations into the peritoneal cavity have taken place. Cases are rare in which there is spontaneous separation and expulsion of the invaginated tissues, and even if there should be such a result, a stricture of the intestine may occur which may lead to a fatal issue. The surgical means which are to be considered are, (1) inflation with inversion; (2) if this treatment should be unavailing,



opening of the abdomen and release of the invaginated elements; (3) enterectomy. If the case is seen sufficiently early the author believes that the first method of treatment will rarely fail to be successful. The object of inversion is to allow the intestines to gravitate to the upper part of the abdominal cavity, by which means the lower portion of the intestines will be straightened, and the air which is introduced into the rectum may be forced directly towards the invaginated portions. If injections of water are used instead of air there is greater danger of rupture; and even if the invagination is reduced, the presence of a great quantity of water in the intestines will be liable to provoke diarrhœa. On the other hand, if air is injected it will provoke peristaltic action, and the pressure which it exercises will be likely to be as efficient as can be obtained. In making the injection the patient must first be anæsthetized to secure the greatest possible relaxation of the abdominal muscles, a rubber tube should be introduced into the rectum two or three inches, and so secured at the anus that reflux of air will be prevented. The tube should be attached to a flexible bag, and by compressing this the air may be pumped in (a Davidson's syringe answers the purpose very well). If reduction is accomplished, the assistant, whose hand is upon the invaginated mass, will feel that the tumor gradually diminishes and finally disappears; he will also be conscious of the gradual advancement of the volume of air which is introduced; and finally the entire abdomen will become uniformly extended and tympanitic. The tube should then be removed from the rectum, the air in the intestines will gradually be evacuated, and the after-treatment should be begun, which will consist in limitation of the diet to milk and ice, and the use of stimulants to prevent collapse. Small doses of opium should be given in case there is pain or diarrhœa. A case is narrated in which this plan of treatment was successfully carried out, the treatment being instituted on the third day after the trouble began.

A. F. C.

Marsh: Non-Union after Osteotomy for a Rachitic Deformity. (*Lancet*, April 7, 1888.)

The patient, aged seven, was shown to the Midland Medical Society, who had osteotomy done for anterior curvature of the left tibia when he was three years old. Union was said to have occurred after the first operation, but, as some deformity returned, eighteen months ago a second operation was done. There was a good deal of suppuration and the wound healed slowly, but no necrosis followed. He finally got about on crutches.

His present condition was that the left leg was one and a half inches shorter than the right, and the muscles much wasted. There was a false joint at a point two inches below the middle of the tibia, the fragments being held together by some fibrous tissue. Free mobility was prevented by the fibula. This bone was hypertrophied and curved anteriorly in its lower half.

The non-union was attributed to local causes, probably imperfect fixation and injury of the nutrient artery. The general condition of the patient was good.

**Sayre: On the Advantages of Plaster-of-Paris Dressings as a Means of Spinal Support.** (*New York Med. Jour.*, June 16, 1888.)

The writer believes that the plaster-of-Paris jacket and jury-mast in cases of spondylitis, or Pott's disease, and that the plaster-of-Paris corset in cases of rotary lateral curvature, are altogether superior to any other instruments yet devised for the relief of these infirmities, and for the following reasons:

1. They can be applied in any place and by any competent physician with perfect success, without the intervention or aid of any instrument-maker. This to the country practitioner is a point of most vital importance.

2. They can be worn with perfect ease and comfort to the patient in all cases where they can be properly applied.

3. The plaster-of-Paris jacket and jury-mast retains the spinal column in a more quiescent condition, and relieves the inflamed parts from the pressure of the superincumbent head and shoulders in cases of spondylitis, better than any other device heretofore employed.

4. That, being applied while the hands are over the head and the body partially suspended, the thoracic cavity is expanded to its utmost capacity, thereby increasing the ability for full inspiration better than can be done by any instrument which is retained in position by girdling the thorax, either by fixed bands or by elastic straps.

5. That, being porous and permeable to the air, it does not interfere with the insensible perspiration, and is therefore infinitely more healthy than the shellac, gutta-percha, felt, leather, raw-hide, silicate of sodium, or any of the other substitutes that have been suggested to take its place.

6. That it does not "breed vermin" or other filth, as has been charged against it, but is, on the contrary, more cleanly and more healthy on account of its porosity.

7. That, in cases of rotary lateral curvature, when the deformity cannot be overcome by any amount of lateral press-

ure until the column has been elongated, the plaster-of-Paris bandage can be more accurately applied than any other material, and, thus accurately adjusted to all of the irregularities of the body and closely fitting it in every place, will retain the body in the improved position which partial self-suspension gives it better than any other device, and be infinitely more comfortable to the patient.

**Walsham:** The Treatment of Club-foot by Immediate Restoration of the Parts to their Normal Position after Tenotomy. (*Lancet*, May 19, 1888.)

The author's plan is as follows: divide the tendon, then break down any adhesions by forcible but gentle manipulation, close the puncture with a pledget of lint soaked in carbolic oil, or with iodoform gauze, enclose the foot in a cotton-wool bandage, and apply plaster of Paris. Unless there is swelling of the toes the dressing should not be changed for ten days or two weeks, to insure perfect rest and an abundance of exudative material for repair.

The advantages over the slow method are the saving of time and of the expense of a costly apparatus. Again, pain is saved, which is produced by the stretching of the uniting material and changing the dressing. In some severe cases the separative material resists stretching so much that redivision of the tendon becomes necessary.

**Samuel West:** Acute Periosteal Swellings in Infancy, of Rachitic (?) Origin. (*Lancet*, April 21, 1888.)

The first case showed a swelling, which was painful and tender, situated at the middle of the left humerus; similar ones were found upon right humerus and left femur. They all came on during the first few weeks of life. The infant was in good general condition, and no other signs of rickets were present, and none of syphilis. They slowly disappeared, and in three months were entirely gone. The patient was the fifth child in the family. The first child had a similar affection when a week old, but now, at nine years, showed no evidence of rickets. The second child had escaped, but the third and fourth were both affected, the latter showing considerable rachitic deformity at three and a half years. There was no history of syphilis, and no evidence of it could be found in the family.

The second case was three weeks old, and a cousin of the preceding case. This swelling was about the left humerus, and was gone in a month. There were three other children in this family; one had been similarly affected, two had escaped. Here, also, there was no evidence of syphilis.



Dr. West believes that all these cases were closely allied to acute rickets, if not that disease. The element of scurvy was supposed by some to enter into acute rickets, but this was wanting in the cases related.

In none of the cases was any active treatment employed. When the swelling disappeared the bones were found straight, and the author did not think there could have been a fracture present.

Dr. Barlow thought these were bone-lesions in a case of intra-uterine rickets. He strongly suspected green-stick fractures as the cause of the swellings.

Dr. Dickinson quoted a case in which a periosteal swelling in a cachectic subject was thought to be syphilitic, but specific treatment had no effect, and the case finally recovered on a change of diet. He thought it was scorbutic.

Mr. Parker did not regard these cases as either rickets or scurvy. Rickets rarely occurred in the centre of the long bones, but when it came on soon after birth it affected the epiphyses.

He was inclined to look upon the cases as syphilitic.

**Neukomm:** The Results which follow Tracheotomy in Children for Laryngeal Diphtheria. (*Arch. di Patol. Inf.*, May, 1888.)

During a period of three years tracheotomy was performed two hundred and three times at the surgical clinic in Zurich upon children who suffered from croupous laryngitis, resulting in eighty-one cures. The subsequent histories of seventy-nine of these were obtained, and of that number fifty-eight remained in perfect health, the remaining twenty-one showing some alteration in the respiratory apparatus. In eight of the cases there was apparent defect in the union of the cricoid with the thyroid, while the others showed morbid sensibility in the cicatrix resulting from the operation, and a certain degree of vocal disturbance due to defective performance of the functions of the crico-thyroid muscles. In two of the cases, in which death occurred after the patients left the hospital, this result took place, in one of them, five months after recovery from the operation, and in the other it took place in connection with a paroxysm of suffocation, which was probably due to the presence of fungous granulation-tissue in the trachea. The cicatrix, which was rhomboidal in form in most of the cases, showed a tendency to descend towards the side of the sternum. Alterations in the voice were somewhat more frequent after crico-tracheotomy than after simple tracheotomy. In six children who showed considerable development of the

thyroid gland at the time of the operation, there was reduction of this hypertrophy after complete recovery from the operation.

A. F. C.

Roser: *The After-Treatment of Tracheotomized Children.* (*Rev. Mens. des Mal. de l'Enf.*, June, 1888.)

Of forty-seven diphtheritic patients tracheotomized during the past three years at the Marburg surgical clinic there have been fifty-three per cent. of recoveries. These favorable results were due to the use of a canula which was provided with an iodoform tampon. It is well known that the diphtheritic process advances step by step, the same as erysipelas, and the author believes that the iodoform tampon in the trachea with the canula constitutes a barrier which the diphtheritic inflammation in the larynx cannot pass. The canula is prepared by surrounding it with a muslin bandage ten centimetres long and two centimetres wide, which has first been moistened in a solution of sublimate. While it is still moist it is sprinkled with powdered iodoform. This forms a crust, which adheres more or less firmly to the canula. When the instrument, thus prepared, is inserted into the trachea the muslin swells again, and thus an antiseptic tampon opposes the development of the infectious process in the surrounding tissue. The canula, with its tampon, must exactly obturate the lumen of the trachea. Its calibre will therefore vary with the age and size of the patient. It should be left in the trachea two days, and then it should be replaced by a fresh one, which may remain until the fifth day. The advantages of this canula are that gangrene will be prevented, hemorrhage from or into the trachea cannot take place, neither can tracheal granulations form. It also tends to prevent necrosis of the cartilages, and hinders particles of food from getting into the respiratory passages, especially in cases in which the muscles of the pharynx are paralyzed. When diphtheritic false membranes have surrounded the trachea, attempts to dislodge them, which are usually made with an elastic catheter, often result in fixing the foreign body yet more firmly. For such conditions the author has devised an instrument, consisting essentially of a soft, flexible urethral bougie, upon whose lower extremity is a ring five or six millimetres in diameter. This instrument can be readily introduced into and around the larger bronchi, the ring being worked against either wall, and fragments of membrane can thus be easily detached and removed. Only in exceptional cases should an aspiratory syringe be used to remove obstructions from the smaller bronchi. Before proceeding the author instils ten or twenty drops of sublimate solution into the trachea. A. F. C.

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## Original Communications.

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### THERAPEUTICS OF INFANCY AND CHILDHOOD.

BY A. JACOBI, M.D.,

President of the New York Academy of Medicine, Clinical Professor of the Diseases of Children in the College of Physicians and Surgeons, New York, etc.

(Continued from August Number.)

#### IV.—CONSTITUTIONAL DISORDERS.

##### 3. *Scrofulosis*.—*Scrofula*.

THE discrimination between scrofula and tuberculosis is attended with no difficulty for those who claim the bacillus of Koch as the pathognomonic essence of the latter. For all the rest, and so it was before the period of the bacillus, the distinction may not be quite so easy; at all events, the boundary-lines between scrofula and tuberculosis are not always quite marked. But it is certain that the bacillus is absent in the former as long as this remains uncomplicated with an accidental invasion.

We speak of scrofula in persons who exhibit a great tendency, with no apparent, or upon the slightest, provocation, to subacute or chronic inflammation of most tissues, mainly the cutis and mucous membranes, sensory organs, glands, bones, and joints. These inflammations are persistent and liable to return; they run their course with both rapid formation and disintegration of the cells, equally in the erethic and torpid



forms. Of these, the former is recognized by a frail and thin stature, delicate features, great intellect, blue sclerotic, and large pupils; the latter, by coarse and expressionless face, œdematous lips and nose, congested eyes, large abdomen, swollen glands, and frequent cutaneous eruptions.

It is no reproach to modern therapeutics to be mostly preventive. So is the treatment of scrofula. Many cases of the disorder would not appear if our modes of thinking and feeling, our habits and laws, were not the immediate results of individual egotism. As long as the welfare of the commonwealth, both present and future, does not supersede, in the convictions of the many, the dictates of selfishness, there will be no restriction on the marriages of the scrofulous, syphilitic, and tuberculous, and the propagation and proliferation of their dangerous ailments. If the mankind of the future means to be healthy and happy, there must be found some mode of preventing hereditary influences from having full sway. We are no Spartans, who kill the unhealthy newly born, but we are to develop into men who pity those laden by their very parents with the eternal curse of illness, and citizens who feel responsible for the physical and intellectual welfare of the community. In the States, scrofula has been on the increase at a rapid pace since the immigration of the most abject parts of the most abject peoples of the Old World has been allowed to swell our numbers by the hundreds of thousands for each of the last dozen years.

An important preventive measure is the suppression of the attacks of acute diseases in children, mainly the eruptive fevers. Upon a former occasion I have emphasized the necessity of medical (hygienic and pharmaceutical) treatment of every case. It is particularly measles and scarlatina which are liable to interfere with the subsequent normal development,—the former through its influence on the respiratory, the latter through its effect on the digestive and lymphatic systems, and also on the bones. The modification of a severe form into a milder form, and the early restitution of the physical functions to a normal standard, is a gain for life.

Scrofula being frequently the direct result of digestive disorders, resulting either from improper food or nutriment im-

properly given, the greatest care is to be bestowed on both food and the digestive organs. This is of more than the average importance in reference to the offspring of tuberculous parents. No tuberculous mother must nurse her own infant. The selection of the wet-nurse must be the most painstaking, and the period and mode of weaning must be supervised with the utmost care. Afterwards amylaceous food, particularly potatoes, must be avoided, or given in small quantities only. Good milk (boiled), cereals, and meat, with the addition of fruit, ought to be the principal food of children up to their tenth or twelfth year. Stimulants must not be given except on proper and exceptional indications; thus tea, coffee, alcohol, beverages of any kind, are forbidden as articles of diet. Cocoa must take the place of chocolate. The best beverage is water. It supplies every want, and when taken in sufficient quantities is the best stimulant of tissue metamorphosis. In the very rare cases in which a sensitive stomach does not bear it well, a carbonated or (and) slightly alkaline water will take its place.

Among the foods, cod-liver oil ranks high. Most children take it readily after a short time, and are anxious to have it. Thus there was no necessity of peptonizing, emulsionizing, or "hydroleinizing" from the point of view of the children, or practice. Of the reprehensibility of filling the child's digestive organs with unlimited lime I have spoken in another place. The oil can be taken in successive years. Its administration ought to be interrupted during warm days and during the summer. Still, there are those who bear it well all the time. Fat children do better without it. In disorders of the stomach, and while the appetite is bad, also during a feverish disease of any kind, also during a diarrhoea, it must not be given.

Preparations of malt may be administered to advantage in small quantities several times daily. It is self-understood that the multitude of preparations containing medicines will be left by the intelligent practitioner to the shelves of the corner pharmacy.

Tea of walnut leaves was a universal remedy in scrofulous affections when the tastes were simpler, medicines less in

number, and less ready money was invested in expensive articles. Among the poor, and in country districts, it will prove an admirable adjuvant.

Among medicinal preparations it is those of iron and iodine which have met with most praise. The indications for the administration of the former are those of anæmia. Where this is marked, iron ought to be given, and continued for a long period, according to the principles and methods laid down in a previous chapter. Iodide of potassium, of sodium, and the tincture of iodine have been used. In the erethic form of scrofula they may do harm, and ought to be avoided. The same warning holds good in reference to those children who suffer from frequent attacks of bronchitis, which may already be the precursor or accompaniment of pulmonary tuberculosis. A sensitive stomach will not bear it. It may be made more digestible by the addition of a bitter tonic, and particularly by a few drops of tincture of *nux vomica*, diluted, with each dose. When the iodide results in bringing on the disagreeable or dangerous symptoms of iodism, the addition of chlorate of potassium to the iodide, in doses of from fifteen to thirty grains daily, according to age, will prove beneficial. The potassium (or sodium) iodide may be taken in five- or six-grain doses, daily, by a child of two years, fifteen grains at ten years, for a long period. The sodium is better tolerated, as a rule. The tincture must not be administered in more than one-drop doses, three times a day.

The indications for the use of iodine in general are also valid for that of the mineral springs containing that element, such as St. Catherine or Kreuznach. Fat children, and those with œdematous swellings, glandular infiltrations, or the exudations resulting from scrofulous inflammations, are mostly benefited by them.

Of phosphorus, as a tissue-builder in subacute and chronic inflammations of the bones, I have spoken in another connection. Its property as a stimulant of growth in general I have often verified in many morbid conditions. Scrofulous tissues, with their rapid decay and new formation, have indeed the character of an inflammation, with the peculiar characteristic of cell proliferation, which perishes speedily because it is not



sustained by a healthy connective tissue. The latter is formed by the internal administration of minute doses of phosphorus, such as I have recommended for the above indications. Thus I refer to the remarks made previously on the subject, on the doses in which the drug is to be given, the period it is to be continued, and the impossibility of substituting for it any of its salts. Those who do not pin their faith in the treatment of any disease on any single remedy, but combine remedial measures with the proper regard to hygiene, will not be mistaken in their expectations of the effects of phosphorus in the treatment of scrofulous disorder. I have used arsenic for the same purposes, and on the strength of the same indications, but it has appeared to me to offer less advantages in these conditions.

A very active treatment can and must be applied to the lymph-bodies. Their tumefaction may be prevented in most cases. They swell under the influence of an irritation in the neighborhood. An intestinal catarrh will congest the neighboring mesenteric lymph-bodies; within a few days they are enlarged and hyperæmic. When the local catarrh continues the hyperæmia will result in hyperplasia, and no long period is required to so change the tissue as to render the induration unabsorbable. If the diarrhœa "of the second summer," or of "teething," had not been permitted to go unchecked, these "scrofulous" glands would never have existed, and never interfered with lymph circulation and nutrition. Or a nasal catarrh, or a facial eczema, or one of the scalp, is allowed to continue and develop into a chronic condition, and the secondary swelling of the glands round the throat and neck is the irrepressible result. *Principiis obsta.* The greatest and gravest consequences might easily be prevented by attending to their trifling causes.

When the lymph-bodies have had time to undergo induration, the attempt must be made to reduce them, though they be ever so hard or large. The frequent inunction of iodide of potassium ointment made with lanolin will often carry the point. Which preparations ought to be used, and to what extent the remedy, to what the massage of the parts is effective, have been detailed before. At the same time the syrup of the iodide of iron may be administered internally.

When these measures have proved inefficient after a reasonable time, the indurated lymph-bodies must be removed. The operation is not always easy, but recovery is almost certain, and the protection afforded by it pays more than fully for every exertion on the part of the medical man, and the temporary annoyance on that of the patient.

Diseased bones must be treated on similar principles. Unless a scrofulous ostitis be superficial and within easy reach, the diseased parts ought to be removed with the least possible delay. The number of cases recovering, though after a long time, and sometimes with shattered general health, without an operation, affords no excuse for those which have been permitted to develop into caries, or necrosis, or pyæmia, or leucocythæmia.

That the scrofulous condition requires good air and ventilation may be mentioned, though it hardly appears necessary to do so. The children ought to be kept in the open air constantly. For that purpose the winters ought to be passed, if circumstances permit, in warmer climates. From that point of view the summer sea-sanitaria of our large cities, and the similar institutions of the civilized countries of Europe, have rendered valuable services.

The skin of a scrofulous child must be kept scrupulously clean. But water must do more than merely that: the child must get used to cold water, and thereby accustomed to changes of temperatures. The principles laid down in connection with the bathing of the very young hold good here, and I refer to my remarks on the subject. Salt water is preferable to plain water, and sea-bathing to either. Only in the cases of those who suffer greatly from eczema and other scrofulous eruptions, water must be avoided as long as the surface is not relieved. Indeed, no irritation of the surface is tolerated. Thus a scrofulous skin ought to be spared adhesive plasters or vesicatories, though the indications for their use be ever so tempting.

Incidental diseases of scrofulous children require more than the usual care. The perishable character of all their tissues render an average febrile or inflammatory disease uncommonly dangerous. Unexpected deaths are frequently met with in

such cases. In them the avoidance of strong purgatives, or depletions, is the first commandment; in them early feeding and sufficient general stimulation are among the principal indications; in them cardiac tonics, given timely and plentifully, will save many a life that would otherwise succumb.

(To be continued.)

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## DISEASES OF THE MOUTH (NON-SURGICAL).

BY F. FORCHHEIMER, M.D,

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IT is difficult to find a subject in diseases of children upon which so much confusion exists as upon the above. There are many reasons for this. The historical development of the subject has been slow; indeed, very little clearing has been done up to within the last fifteen or twenty years; then, a term first used by Hippocrates (aphthæ) has caused considerable confusion. Finally, these forms of disease have suffered, in common with all diseases of children, on account of inattention, consequently lack of observation, or observation made in the direction of some preconceived view or theory only. Hippocrates and Galen and their followers first used the term aphthæ, and, by degrees, every trouble that took place in the mouth was called apthous. The distinctions and subdivisions made were in some instances simply ludicrous. It was not until the time of Bretonneau that diphtheritic sore mouth was separated from aphthæ, and some authors drew their lines of subdivision so finely that they could make a great number of varieties of aphthæ (16 Sagar). The result of this was that everything was so completely jumbled up that one writer failed to understand the other. Even if our present textbooks are carefully examined into, notably those on practice, it will be seen how lamentably weak, in nearly all instances, the chapter or chapters on the diseases of the mouth are, the omissions not to be taken into consideration at all. A great



deal of this must be due to the fact that misunderstandings are caused by the very inaccurate and confusing nomenclature still in use. In considering the non-surgical diseases of the mouth we can divide up the subject into two broad subdivisions to begin with: first, the diseases affecting those parts within the mouth; secondly, those diseases affecting the organs outside the mouth whose physiological functions are carried on in the mouth. Under the first heading come all the affections of the mucous membrane, its various layers and its glands, the teeth and the tongue; under the second, those of the salivary glands and their ducts. Before going on to the separate subdivisions and their discussion, it is necessary to take a glance at the physiological processes going on within the mouth of a child. From a physiological stand-point, the mouth of a newly-born child must be looked upon as a passage-way for food endowed with organs of suction. Although ptyalin has been found in infusions from the salivary glands of the newly born (Zweifel, Korownin), the fact remains that, for digestive purposes, the mouth can be practically excluded. The reason is to be found in the often-repeated observation that before dentition the mouth of the child contains very little saliva. If we inspect the mouth of a very young child—up to three or four months, seldom later—we will find the mucous membrane comparatively dry, the tongue always more or less coated and dry, and of a peculiar color and reaction to reflected light. The coating is sometimes found evenly distributed over the surface, but more commonly it is especially developed where muscular activity would have the least effect upon disturbing the epithelial layer; the edges, tip, and centre would therefore have a smaller deposit than the other parts of the tongue. If the scrapings of such a tongue be examined under the microscope, it will be seen to be made up principally of food-remnants and epithelial cells, the former predominating. In the healthy adult the saliva is poured out upon the least excitation, central or reflex, therefore the tongue is usually clean, as the mouth is constantly washed by fluid; but in infants this rarely takes place, even after the administration of sialagogues (jaborandi perhaps excepted), therefore the tongue is coated and the mouth dry. When we

take into consideration how much value is still attached to the appearance of the tongue in disease, this fact is worthy of consideration. Usually the salivary glands begin to be called into activity before the teeth make their appearance,—the time varies very much, sometimes as much as three or four months elapsing. It is impossible to say whether this is due simply to reflex activity or progress in development of the glands. It is certain that if the mouth of a newly-born infant is irritated mechanically, very little if any saliva will flow. Again, if we irritate the mouth of an infant beginning to produce saliva, the increase will be hardly appreciable. If there is, then, a reflex mechanism at work in these instances, it must be an incomplete one, either as to the sensitive nerve, the centre, or the secretory nerves. The secretory nerves do not seem at fault, for, first, there is a quantity of saliva secreted, and, secondly, if the diastatic power of this saliva be tested in the usual manner, it will be found to be good; perhaps not always as rapid as with adult saliva, but sufficiently so to show that ptyalin is present in adequate quantity. As far as concerns the action of the salivary centre, at the origin of the seventh and ninth cranial nerves in the medulla, we do not possess any facts which could lead us to suppose that it acts differently in infants than in the adult; yet this might be possible, as the brain of an infant does perform different and incomplete functions from that of an adult. The experience of Mischterlich—no irritation, no saliva—does not help us out, for, if any irritant be put into the mouth of an infant, reaction in the form of motion will take place and yet no saliva may follow. Experiments and observations in this direction would be very desirable not only on account of clearing up those processes, but also because of the important rôle the nerve-mechanism of the mouth has always played in infant etiology. When the flow of saliva has been started, the mouth of the infant does not change its character to an adult mouth immediately, for the simple reason that most of the saliva flows from the mouth, and not through it. The tongue, especially, remains as it was, as the saliva from the parotids flows along the cheeks, between them and the partly-opened mouth, and that from the submaxillary and sublingual glands over the lips.

Very little saliva is swallowed, so that its digestive activity, and with it that of the pancreas, must still be very limited,—a fact of great importance in dietetics. The nature of the food—coagulability, adhesibility, fluidity—must also be taken into consideration in estimating the appearance of a child's mouth, so that peculiarities are common long after the salivary function has been thoroughly established. The appearance of the teeth marks an epoch in the development of the child, and, as has been the case with all physiological processes, most, if not all, the ailments of childhood have been ascribed to it. The question of teeth and teething is of such value to us as physicians that it will be discussed separately.

On the subject of etiology our lack of knowledge is still great, although much has been done within late years. Nowhere in the human organism do we find so admirable a field for the development of lower forms of life as in the mouth of an infant. The great number of forms present (Miller describes twenty-five varieties) has undoubtedly made the work of bacteriologists doubly hard, and in some instances must have made it futile; but, with advanced methods and repeated, patient efforts, very much more will be accomplished. As far as general symptomatology is concerned there is but one symptom that need be specially dwelt upon, and that is pain. This is present in nearly every form of sore mouth, and in some it is the prominent symptom. It is a good rule to follow, that when an infant is suffering with pain which cannot be localized, to examine its clothing, its mouth and throat, and its ears. Those possessing clinical experience have seen children who have been crying for days, who have perhaps been treated by physicians, taken opiates or chloral, in whom an examination reveals stomatitis ulcerosa. The diagnosis made, the whole picture will clear up in twenty-four hours upon proper treatment. A case of this description is the more remarkable because the mouth of a child can be so readily examined. It is not necessary to carry a set of instruments for the purpose; all that is required is good light and, if necessary, a separation of the lips or the holding down of the tongue with a spoon. A tongue-depressor ought not to be used, for several reasons: a little child will always be more frightened at an instrument



with which it is not familiar than at a spoon, and, secondly, a tongue-depressor may be the means of carrying infection if not kept aseptic. The latter, although theoretically the case, in busy practice is apt to be neglected, and damage is very easily done to an already inflamed mouth. On account of the facility with which the mouth is examined, the purely clinical aspect of our subject is perhaps best understood, but for the same reason most often neglected, as we are apt to overlook those things that are nearest. It is necessary to call attention to the fact that in the treatment of all diseases of the mouth cleanliness is of the highest importance, although the experiments of Fischer seem to show that even this may do harm. It is astonishing to see how the idea of cleanliness varies, both with the laity and physicians. With the latter it will only be a matter of time until perfect cleanliness is thoroughly understood and appreciated. It is not beneath the dignity of a physician to teach his patients how to cleanse. Roughness, too, should be avoided in treating sore mouths; not to mention the pain that is given, we do absolute harm by using mechanical violence. In but one form of stomatitis is it necessary to remove anything; in all the rest, applications made by the gentlest means will give the best results. As was first shown by Rajewsky in diphtheria, all inflamed mucous membranes are more susceptible to infection than healthy ones. If we are dealing with infectious processes, and this is the case with many of the affections of the mouth, it will be seen how injury to the mucous membrane can only lead to an extension of the process. Hunt and West were the first to use chlorate of potassium in the treatment of diseases of the mouth, and since that time the remedy has been used by the profession, and in some cases has been regarded as a specific. This remedy has deservedly retained its place upon our list of drugs; and it acts equally well if applied locally or by the stomach,—a fact of great importance, especially in the treatment of younger children. It appears in the saliva, when taken internally, after a very short time (from five to ten minutes), and its secretion continues for some time, so that it is best given in small doses at short intervals. Its use, however, is not unattended by danger,—a fact which Jacobi was the first to call attention

to, as it affects the secretion of urine, and may even produce anatomical lesions in the kidneys. In order to prevent this, two things are necessary: not to give too large doses of the drug, and, secondly, to impress upon the attendants the necessity of watching the child in certain directions. It has been the result of the author's observation that the symptoms of chlorate of potassium poisoning do not develop suddenly, but are usually preceded by symptoms which will give plenty of time to prevent dangerous consequences if the remedy be stopped. These symptoms are diminution or cessation of formation of urine, and great drowsiness,—they usually go together, and are to be looked upon as a warning. In some children, especially infants, chlorate of potassium will act like a large dose of opium.

It is proper, in this connection, to call attention to the fact that diseases of the mouth, especially in infants, and more so in some forms than in others, are not to be treated as purely local affections. If we abstract entirely from the recognized fact that some of these diseases have a constitutional origin, and that many more are provoked by general predisposing causes, there is still left a factor which must make us very cautious in observing the general effects of these maladies. Especial reference is made to the connection that exists between the mouth and the rest of the alimentary canal. It seems that under normal conditions the gastric juice is in a condition to destroy most of the lower pathogenic forms of life, but if we consider how finely balanced is the digestive process in children, and how little it takes to convert eupepsia into dyspepsia, it will be seen how disastrous may become the swallowing of large quantities of saliva and mucus, if by their chemical interference only. Now, add to this lower forms of life in the saliva, which, under the changed conditions in the stomach, cannot be destroyed, the effects will be still more marked. It is not surprising, therefore, that a great many authors have sought a causal connection between diseases of the stomach and diseases of the mouth,—as disturbances of digestion are so common with disturbances in the mouth,—but that the primary cause was referred to the stomach was rather remarkable. It is not an infrequent experience to see a case of

stomatitis ulcerosa treated with strict diet, which cannot do harm until pushed to extremes, because "the sore mouth comes from the stomach." The author has seen children, with conditions of the mouth probably congenital and possibly lasting during the lifetime of the patient, put upon rigid diet, made to take pepsin, arsenic, or what not by most reputable practitioners, only because all diseases of the mouth have their origin in the stomach. It is unnecessary to add that the results of such treatment were *nil*, and a few local applications were sufficient to alleviate those symptoms which brought the patient to the physician. As will be seen, the term stomatitis has been retained to mean sore mouth. Strictly speaking, this is incorrect, as stomatitis means an inflammation of the mouth; but classification becomes very much easier by retaining this term, which is used by nearly all nations, and therefore it facilitates memory by bringing all forms together under one heading. If the mind can group things together in this way, differential diagnosis also becomes easier, and the attention will always be called to the whole group, from which the individual can be more readily selected. The great objection to this classification is that in order to make it complete so many species must be made that it becomes bulky and we counteract the benefits before mentioned. This can be prevented, however, by rejecting special names for those forms that are symptoms of general diseases, and which belong to the latter, as stomatitis scarlatinosa, stomatitis erysipelatos, etc. The use of a Latin instead of an English term is certainly advisable, as it gives to all physicians of the world a common language, which, in these days of rapid interchange of thought, is highly important and time-saving. In the classification which we will follow we make the following subdivisions:

- I. Stomatitis catarrhalis.
- II. Stomatitis aphthosa.
- III. Stomatitis ulcerosa.
- IV. Stomatitis mycosa.
- V. Stomatitis gangrenosa.
- VI. Stomatitis crouposa.  
Stomatitis diphtheritica.
- VII. Stomatitis syphilitica.



## I.

## STOMATITIS CATARRHALIS.

This form of trouble has also been called simple stomatitis. By some of the English authors it has been described under a common heading with follicular and aphthous sore mouth, from which it can be, however, most readily distinguished. Two subdivisions can be made: first, a local; secondly, a general catarrhal stomatitis.

*Etiology.*—Catarrhal stomatitis may be produced in various ways. For its production it is necessary to consider two things: first, an irritant; secondly, the mucous membrane. The irritation may consist of very many agents; it may be mechanical, thermal, chemical, or some lower form of life which acts either mechanically or chemically. The teeth have been looked upon as the most common mechanical agent in producing stomatitis. While there can be no doubt about the fact that when a tooth is about to appear there is more or less injection and swelling of the gums, yet in a healthy child this alone would never be sufficient to produce a general stomatitis. There are various well-marked lesions which are produced by teething, and which will be considered at some future time, but for the production of a general catarrhal stomatitis the second etiological factor mentioned above must be present. Lack of cleanliness in the mouth is a well-recognized cause for the trouble under consideration. This may be causative in various directions, quality and quantity of food being the most important, and their action being chemical and mechanical. A child fed upon food which is in fermentation, which has a very acid reaction, or particles of which are apt to remain in the mouth, will suffer more or less, depending upon the extensiveness of the irritation. The same can be said for food introduced at too high a temperature. Many mothers are in the habit of feeding their children with milk which is too warm, and in tea-drinking countries, like England, it is not uncommon to find even more serious affections follow the introduction of this beverage when too hot (retro-pharyngeal abscess, Bokai). An increase in quantity of food will produce

stomatitis in an indirect way by causing trouble with the whole alimentary tract. Any weak chemical irritant acting for a long time, or a comparatively strong one when swallowed rapidly and mixed with much saliva, is apt to produce this affection. It is difficult to conceive of eructations of sour-stomach contents, when not habitual, causing a sore mouth, yet vomiting, when extending over a long time, is apt to be followed by it; although here, again, it is difficult to say whether the cause which has produced the dyspepsia has not also produced the sore mouth. As far as the lower forms of life are concerned, it is impossible at the present time to say positively that any of them can be looked upon as causative. To my knowledge, no experiments have as yet been made in this connection. There is one fact, however, known long before the days of the culture-tube, and which points in this direction. It has been thoroughly understood for the last ten years, at least, that nearly all forms of sore mouth are preceded by a stomatitis catarrhalis. For this an explanation can be found in two ways only: either the same cause is at work for stomatitis catarrhalis and the other forms, or it is necessary that the mucous membrane be in a proper condition to be affected by the poisons of the other forms only after it has been first made catarrhal. The latter is the view held by very many authorities, it being most commonly expressed by the statement that the child is suffering from malnutrition, a dyscrasia, scrofula, or what not. One quotation will suffice: "Follicular (or simple) stomatitis is not a serious complaint, though it indicates a weak state of health and a faulty nutrition" (W. Fairlie Clarke in Quain's "Dictionary"). While it is difficult to disprove such a statement as the latter, it will be seen, upon closer investigation, that the stomatitis and the intestinal catarrh or dyspepsia accompanying it is the cause of "the weak state of health," and not the result. However, that "a faulty nutrition," or whatever it may be called, has a decided effect upon producing stomatitis will be pointed out later. Whether or no *oïdium albicans*, the various pathogenic schizomycetes, also produce the combination of symptoms which we call stomatitis, as well as dyspepsia, is a thing to be decided by direct experimentation, although there are a great many facts in bacteriology which would lead

us to suppose that this might be possible. If we accept one view or the other, the subject of catarrhal stomatitis assumes great importance when we recognize that this disease may lead to others of a much more serious nature, which may be prevented by proper treatment. As far as the second etiological factor, the mucous membrane itself, is concerned, it must be remembered that it is in direct continuous connection with the mucous membrane of the nose and the pharynx. A catarrh of any one of these membranes may extend itself to the mouth; this does occur, but not frequently. Finally, a non-healthy mucous membrane, whose nutrition is impaired by disturbances in circulation either in the blood- or lymph-vessels, or whose blood-supply is otherwise not good, would naturally form a better soil for the implantation of pathogenic causes than a healthy membrane. From such a mucous membrane it would also be more difficult to remove such causative agents, as it would require less time for them to gain a foothold. A so-called scrofulous child would be more apt to suffer with sore mouth than a healthy one (for mechanism see Buck's "Hand-Book," article "Tuberculosis of Glands"). The same would be true for a child whose resistance-power is reduced by any of the febrile diseases which last for a considerable length of time—typhoid fever, malaria, the acute exanthemata—or by chronic intestinal diseases. It will be seen, then, that the condition of the mucous membrane is of the highest importance in the prevention of stomatitis; and, undoubtedly, with a little care a great many diseases—diphtheria, for instance—could be prevented if apparently trifling abnormalities would be looked after more closely. Bad cases of harelip or cleft-palate will cause more or less chronic stomatitis, as the air is constantly brought into contact with the mucous membrane, which ought otherwise to be closed off, at least temporarily. In the localized form the causes are, in general, the same as those for the other form, only not so extensive in their action. Most commonly we will find some quite localized irritation,—a sharp tooth or pus flowing from a chronic perialveolar abscess,—which keeps up a condition of inflammation. Again, it may be some article of food or a method of feeding. In some parts of Germany that ingenious device called a Lutsch-beutel always



succeeds in getting up a stomatitis, either local or general. With us some of the beautiful apparatuses invented to facilitate teething, especially when they are rolled about the floor or contain materials which can be fermented or are otherwise unclean, succeed admirably in accomplishing our end. At all events, the cause can be readily removed in most instances, and, unless harm has been done in other directions, the patient rapidly recovers.

(To be continued.)

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## ON DEFERVESCENTS AND THE JUGULATION OF ACUTE DISEASES.

BY BENJAMIN WALKER, L.R.C.P., ED.,  
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DEFERVESCENTS are antipyretics, or remedies which reduce the temperature, and are antagonistic to the febrile state, whether in its initial or more advanced stage.

*By jugulation of disease* is meant the extinguishing or cutting short of acute disease, either in its initial or more advanced stage. That this is possible and practicable is no chimera, as the following pages will show to any unbiased mind. It is peculiarly applicable to the febrile affections of children.

The chief defervescents are the alkaloids of aconite, veratrum, and digitalis, and various salts of quinine. With these are given the alkaloids of nux vomica,—strychnine salts to adults, and the milder brucia to patients of tender years; these latter are given as tonics and sustainers of vitality, as experience shows there is always a tendency to adynamia and prostration in all inflammatory and febrile affections. These remedies may be termed *arms of precision*, and compared with the tinctures, extracts, etc., of the Pharmacopœia are as the modern rifle to the ancient blunderbuss.

In a paper in the London *Lancet* (vol. ii., 1881, p. 994), the

writer urged the desirability of using the alkaloids in preference to the crude preparations (tinctures, extracts, etc.), which are less certain in their action, and often attended by disadvantages in their administration, and possibly leave the patient suffering from the effects of the remedies, when he is relieved of the ailment for which we prescribed. The alkaloids and ultimate principles of medicine are the only arms of precision with which to combat disease, and which we can really use with confidence. Let us illustrate this by a drug which we could ill spare from our pharmacy in its varied forms, viz., opium. This we know contains a considerable number of alkaloids, some of which are valuable remedies, others are only potent for ill, and seriously prejudice the good effects of the benign alkaloid, if given along with it, as must be the case in prescribing the crude drug, tincture, or like preparation. This is practically admitted by the varied forms which are sought after to neutralize this objection, of some one of which every manufacturing chemist of any note is a sponsor; and we get preparations from ancient *Battley* down to *nepenthe*, *akolethe*, *et hoc genus omnium* claiming to "disturb the head less," another "distresses the stomach less," or constipates the bowels less. Nor can these be called in any sense *arms of precision*. Opium contains from six to twelve per cent. of morphia, and therefore we may be ignorantly prescribing but half or double the quantity of this potent alkaloid. This anomaly has been recognized by a leading pharmacist (Squire) by his inaugurating what he terms *constant tinctures* of the more potent drugs, where by a process of assaying they are brought up to a certain fixed standard of alkaloids. Surely this is a very feeble method of arriving at a result, when we can obtain the pure alkaloid of constant strength and power, accurately dosed, void of offending companions, facile of administration, smaller in quantity, more certain in effect, and more agreeable to the patient in every way. These are qualities to recommend them as remedies for every age, and for all time, but are essential and unapproachable in the treatment of the maladies of infancy and youth. The same remarks apply to all drugs: take digitalis, for instance: who has not been annoyed by its toxic effects at one time, and its inertness at

another? We know that the plant collected from different habitats varies in its yield of active principle; digitaline, which is one of our most potent remedies, both as a defervescent and heart-tonic, aconitine and veratrine are also defervescent not sufficiently well known, and no doubt remain untried from the reputation they have of being dangerous drugs. The companion to the British Pharmacopœia (thirteenth edition) says of aconitia, "Not for internal use. It is a very strong poison." Of digitaline, "This powerful poison might well have been omitted from the British Pharmacopœia," and of veratria, "Rarely given internally." Of a truth, no progress can develop with such a mentor; we need not go back a generation to find strychnia and morphia equally guarded. For the last seven or eight years I have used these and the other alkaloids in the treatment of disease, not only without disaster, but with the most beneficent results to the patients, and with a saving of life and diminished mortality which are incontestable. The earliest case to convince me of the superiority of the alkaloidal treatment was one of *scarlatina anginosa*, seven years ago, in a girl of six. The throat-trouble increased, and the child struck against swallowing the ordinary mixture prescribed, but took without difficulty the granules of aconitine, strychnine, and quinine every hour, with the result that the fever fell four degrees (Fahr.) in the first twelve hours, not to rise again, and what promised to be a fatal case in a very short period was relieved of all anxiety in less than twenty-four hours. The preparations which I have found most reliable are the alkaloids in the form of granules prepared by Chauteau,\* of Paris. There are other manufacturers of the alkaloids in similar form, but none so reliable or so easily soluble, and some of them, notably digitaline, hyoscyamine, and emetine, are of a potency unapproachable by any other maker. Let not the prescriber be deterred by their likeness to the homœopathic globules, for with their shape and size all likeness is at an end, and if any sceptic will but masticate a granule, or try their effect on himself, he will no longer think they consist only of sugar of milk. The alkaloids are con-

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\* Fougere, of New York, is, I believe, agent, 30 North William Street.



veniently dosed in one-half and one milligramme, and one centigramme,—that is,  $\frac{1}{130}$ ,  $\frac{1}{65}$ , or  $\frac{1}{32}$  grain, and they are given every half hour or hour, according to the urgency of the case, and continued till a result is produced. This is surely a more philosophical method of treatment, viz., small doses at short intervals till our object is attained, than giving a larger dose at long intervals, blindly pursued and regardless of results, for we have idiosyncrasies to consider,—one patient may respond to two or three doses, another not to twenty or more: and it is more rational to give small doses at short intervals, say till the temperature falls or the neuralgia or pain is relieved, and there is no danger of giving an overdose, for as soon as saturation is produced, or the temperature falls, the drug is discontinued or given at longer intervals.

With regard to the jugulation of acute disease, the following clinical notes will carry conviction to any unbiased mind: Let me ask the sceptical unbeliever to be so honest as to try the remedies in the first acute case. One of the earliest cases treated was that of an infant of six months, which was seen at night suffering from bronchopneumonia. It was evidently sinking; embarrassed respiration eighty to ninety per minute, and a pulse which could not be counted. Aconitine, brucine, and veratrine were given every hour ( $\frac{1}{130}$  grain  $\bar{a}\bar{a}$ ); after the third dose the infant assumed a healthier aspect, the breathing became freer, and when seen next morning the child was smiling and actually convalescent, for all danger was past, and it was in its usual health in a couple of days.

Another case of pneumonia, a little girl, Edith S., *æt.* six, seen on the second day of illness, with dry cough, high temperature, and oppressed breathing, quickly responded to treatment:

	Pulse.	Temp.	Resp.	
May 17, second day...	150	103.3°	48.	Bowels acted after aperient.
" 18, third " ...	140	102°	60.	
" 19, fourth " ...	120	97.7°	44.	
" 20, fifth " ...	90	98°	30.	Well.

One one-hundred-and-thirtieth grain aconitine given hourly first two days, and discontinued when temperature fell to 100°. Emetine every two or three hours till cough is looser or nausea

produced, which occurred in twenty-four hours, and it was then given three times a day. Egg and milk and brandy mixture given on the 18th; 19th, returning appetite; 20th, child well.

William S., aged six: pyrexia. Rigors 27th and 28th. Seen on the 29th.

	Pulse.	Temp.	
August 29, 1 P.M..	156	103.4°	Bowels cleared by purgative.
" 30, 10 A.M..	90	95.6°	

One one-hundred-and-thirtieth grain aconitine half hourly; about twenty doses given.

This case was tackled before any local manifestation was apparent; but had it been treated on the expectant plan, and a *placebo* given to await a diagnosis, no doubt some important organ would have been attacked; instead of which it was made to abort or was jugulated in less than twenty-four hours.

Ellen H., aged four: pneumonia.

	Pulse.	Temp.	Resp.
May 16, third day.....	144	104°	40.
" 17, fourth " .....	144	102.7°	44.
" 18, fifth " .....	144	104°	54.
" 19, sixth " .....	134	103.6°	60.
" 20, seventh " .....	117	99°	45.
" 21, eighth " .....	100	98°	48.
" 22, ninth " .....	100	97.2°	42. Convalescent.

Aconitine and brucine one one-hundred-and-thirtieth, half hourly. This case took longer to bring down the temperature, viz., four days, but when once reduced to normal, not to rise again.

R. J. G., aged ten: had diarrhœa, for which chalk-mixture had been given:

	Pulse.	Temp.	
First seen July 23, second day... 11 A.M.	144	104.2°	
" " " " ... 9 P.M.	108	101.4°	
" 24, third " ... 10 A.M.	116	102.4°	
" " " " ... 7 P.M.	80	100.3°	
" 25, fourth " ... 9 A.M.	72	98.2°	Convalescent.

Aconitine, veratrine, and brucine, every quarter hour till

temperature falls, then every half hour. Digitaline one one-hundred-and-thirtieth every hour also as temperature is high. Convalescent third day of treatment.

Walter L., aged three: worms; pleuropneumonia.

	Pulse.	Temp.	Resp.
July 20, second day.....	150	102.7°	40
" 21, third " .....	160	104.9°	30
" 22, fourth " .....	128	100.5°	
" 23, fifth " .....	152	105.°	50
" 24, sixth " .....	122	101.°	
" 25, seventh " .....	106	96	
" 27, convalescent.			

Aconitine one one-hundred-and-thirtieth grain, half hourly. Third day, scammony purge brought away a lot of worms (thread). Fifth, pain in side with oppressed breathing and exalted temperature. Aconitine as before, and digitaline hourly till temperature down to 100°, which occurred in little more than twenty-four hours.

Leonard P., aged fourteen: pleuropneumonia. Chill two days previously.

	Pulse.	Temp.	
February 6, 10 A.M., third day.....	110	103.1°	Aconitine, veratrine, and brucine, half hourly.
" " 9 P.M., " " .....	106	103.4°	Aconitine, brucine, and digitaline, half hourly.
" 7, 10 A.M., fourth " .....	74	98.4°	Brucine and arseniate quinine, every hour.

Codeine, one-sixty-fifth, when cough is troublesome. No further rise of temperature. Night-sweats occurred on 12th, and were combated by one one-hundred-and-thirtieth of sulphate atropine, and one-sixty-fifth grain hydroferrocyanate of quinine, and flushing occurring about 3 P.M. on 14th, was treated by the hydroferrocyanate of quinine, one-sixty-fifth every half hour from noon each day, for three or four days.

Joseph J., aged four: meningitis (?), ushered in by a convulsion.



	Pulse.	Temp.	Resp.
December 5, 10 P.M.....	144	104.3°	38
" 6, 10 A.M.....	118	100.2°	28
" 7, " " .....	100	98	
" 8, convalescent.			

Aconitine and brucine, half hourly; digitaline, one one-hundred-and-thirtieth, hourly; hot bath, cold to head. Scammony purge. All anxiety relieved in twenty-four hours. Another child of this family died from meningitis.

Samuel B., aged ten: typhoid (infantile remittent). Rigors on 14th.

	Pulse.	Temp.	
Seen May 16.....	102	103°	
" 17.....	90	100.5°	Diarrhœa twice.
" 18.....	88	102.1°	Pain over ileocæcal region.
" 19.....	96	103.6°	Aconitine, half hourly, with veratrine, till temperature falls.
" 20.....	86	101.8°	
" 21.....	75	100.4°	
" 22.....	66	100°	
" 23.....	52	98°	

Annie G., aged seven: dysentery. Sanguine mucous stools with tenesmus frequently. To take hyoscyamine one one-hundred-and-thirtieth grain, half hourly, with bismuth-mixture until tormina ceases; in twenty-four hours a formed motion was passed without blood or slime. Second day, no return of purging; tenderness disappeared, asking for food. To take hydroferrocyanate of quinine, one-thirtieth every four hours.

H., infant, thirteen months. Seen November 23d; convulsion from teething. Warm bath. To take aconitine, veratrine half hourly, and brucine hourly, till temperature (103°) falls. Sick after fifth dose, and veratrine discontinued. 24th, eighteen hours after, child in apparent health, smiling, and with a cool skin. Well.

I would call attention to the rapid fall of temperature in the foregoing cases by the use of these defervescents. And the high temperature is the dangerous factor, for experience shows that if this is once reduced with decision, the disease will be cut short, and made to abort, whatever the indication may be, and whether head, chest, or abdomen be threatened. Com-

pare these results with those obtained from other vaunted remedies for the reduction of temperature, as kairine or antipyrin: the latter, for instance, must be given in doses varying from sixty to one-hundred-and-twenty grains in twenty-four hours, and when the temperature is reduced it almost invariably rises again in a few hours. It is attended by a rash (urticaria), vomiting, and other inconveniences, and it is forbidden in delicate subjects, heart-disease, etc. No such results follow the administration of these *arms of precision*. The temperature once reduced rarely if ever rises again, and is then speedily under control, for we never lose touch of it; and permanent defervescence is the result.

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## ON A SIMPLE METHOD OF PREVENTING SORE THROAT.

BY H. VALENTINE KNAGGS, M.R.C.S., ENG., ETC., LONDON.

THE interest that often attaches itself to simple methods of treatment must be my excuse for resuscitating an old but, at the same time, very little known remedy for preventing the recurrence of ordinary sore throats.

Most people, when they hear of it for the first time, are very apt to smile incredulously, and to at once put it down among the category of superstitions, "old women's remedies," etc. In fact, nearly every patient to whom I have suggested it has appeared sceptical of its utility at first, although subsequently a careful trial has frequently convinced them to the contrary. Its prophylactic powers are undoubted.

The treatment alluded to consists merely in placing round the neck from ten to twenty threads of Berlin wool. This must be worn continuously night and day, and not taken off except for the purpose of making ablutions. With some cases it is necessary that the wool should be worn all the year round; with others, during the months when the complaint is likely to return. When it is thought desirable to discontinue its use, it should be done gradually by discarding a single thread

each day until none are left. If objected to on the score of unsightliness, a small coin or locket may be attached, which will effectually keep the wool out of sight, and, after a time, out of mind.

Laryngitic and tonsillitic forms of disease, which are especially prevalent among children, are due in very many instances to exposure and cold, and are particularly apt to recur periodically, especially in the colder and more changeable periods of the year. It is in such cases that the treatment is productive of marked benefit.

A considerable number of cases, both among children and adults, have been thus treated in our practice. Observations as to its efficacy have extended over a number of years. Strange as it may seem, scarcely in any single instance has it failed in our hands to avert future attacks. One case in particular occurs to me which I would mention as a type of many others.

A gentleman, who was much exposed to the weather, regularly suffered from a severe form of quinsy every year. On applying the Berlin wool in the usual way seven years elapsed without his having even so much as a sign of recurrence. Thinking, however, after the lapse of so long a time, that he was perfectly safe, he *suddenly* left off wearing it, and, as a consequence, paid the penalty of his indiscretion, for shortly afterwards a most severe return of the old complaint manifested itself. Subsequently he resumed the use of the wool, and has had no further return, although two years have now elapsed.

The question naturally arises, How can a simple remedy like a few threads of wool possibly effect this object? or in what manner does it act? In the first place, we know that wool is a bad conductor of heat. Secondly, according to the principles laid down by Dr. Jaeger in his system of sanitary clothing, ventilation is one of the best means at our disposal for promoting skin action, and for retaining the body at an equable temperature both in summer and winter. It is probable, therefore, that the skein of wool, when attached round the neck, *keeps up a belt of skin-action, and so acts continuously, and in a slight degree, as a mild counter-irritant.*



## Current Literature.

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### I.—HYGIENE AND THERAPEUTICS.

Baruch: A Clinical Study of the Etiology and Treatment of Summer Diarrhœa of Infants. (*Medical News*, July 7, 1888.)

The author believes that the summer diarrhœa of infants is due chiefly, though not solely, to the ingestion and multiplication of micro-organisms, which create in the gastro-intestinal tract conditions somewhat similar to those found in wounds, to which septic material has had access. He believes the so-called causes—bad hygiene, artificial feeding, and high temperature—are rather predisposing elements which favor the development of the bacteria, the latter being the true causes of the diarrhœa. He has been led to this conclusion from having met the disease in the country, and where the hygienic surroundings were of the best; he has seen the disease develop in breast-fed children, and has seen other children thrive on cow's milk properly prepared so as to prevent the entrance of the micro-organisms; and, though the high temperature exercises an important influence, still it can only be a predisposing cause, since other bottle-fed children will be exposed to the same conditions with impunity. The author next quotes some researches and experiments showing the presence of the micro-organisms in the milk, in which they are introduced into the intestinal canal, where they find suitable surroundings in which they multiply and produce ptomaines, giving rise to the local lesions and general phenomena of summer diarrhœa, and appearing in the dejecta.

Regarding the presence of these bacteria as the cause, the author divides his treatment into prophylactic and curative. The first thing in prophylaxis is the selection and preparation of the food. The strictest cleanliness must be practised with the milk, as regards the cows and their surroundings, and all vessels in which the milk is to be placed. The milk itself should at once be boiled, under pressure, so as to raise the temperature to 266° F., which not only renders the caseine finely flocculent, so that it is easily digested, but completely sterilizes the milk, and is superior to steaming or other even more elaborate processes. This boiling can be done in a tightly-stoppered, strong glass bottle.

As to the hygienic management of the child. It should have a daily bath of tepid water, followed by rapid sponging

with cold water, and rapid drying and friction. It should be almost constantly in the open air, and have a proper amount of undisturbed sleep. Teething requires no special hygienic management; it is a natural process producing no effect upon the system, provided no other disturbing element is in operation.

The author advises cleansing the baby's mouth, before each feeding, with a weak solution of boric acid or salicylate of sodium, to destroy the bacteria in the oral cavity, and, as a preventive against sudden changes of temperature, the wearing of a flannel bandage around the abdomen and the constant use of socks.

The curative treatment the author divides into four heads.

1. To diminish or remove the source of bacterial supply.
2. To neutralize the disturbance produced by the bacteria.
3. To remove them from the intestinal tract.

4. To meet the nervous prostration, inanition, exhaustion, and other manifestations due to the diarrhoea. To accomplish this, first look to the food. Get a wet-nurse if possible; if not, sterilize the cow's milk and use scrupulous care in its preparation, or withdraw the milk entirely, and substitute barley-water, rice-water, meat-broths deprived of fats, and which have been thoroughly boiled for half an hour and rapidly cooled just before using, or solution of white of egg in boiled water, one egg to the pint. Continue these until the stools become more natural, and then gradually return to the regular food.

To accomplish the second, give the stomach rest if there be nausea and vomiting, and cleanse the viscus by irrigation. To remove fermenting material from the stomach, the author has been in the habit of using warm water containing a little salt, and administered by spoon or bottle, but thinks a small soft-rubber stomach-tube would be an improvement. Practise absolute abstention from food and drink for a few hours. The author thinks mustard sinapisms to the epigastrium and anti-emetic remedies only serve to disturb the patient. If rest does not bring relief he uses Dewees's mixture:

R Magnesia, ℥ss;  
 Spts. ammon. arom., ℥ss;  
 Aq. menth. pip., ℥ij. M.  
 Sig.—Thirty drops every half hour.

This checks fermentation and soothes. If, however, this cannot be retained, one-half to two grains of calomel will almost invariably be retained if administered immediately after vomiting, laid on a teaspoonful of water, or placed dry on the tongue and followed by a few drops of water.

To accomplish the third indication, remove the fermenting material by a full dose of castor oil, or if the stomach is too irritable a dose of calomel. Follow the purgation by thorough irrigation of the large intestine with sterilized warm water. To accomplish this the author uses a rubber horse-catheter or a large Nélaton catheter, which he attaches to a fountain syringe containing a quart of boiled water, in which has been dissolved half a teaspoonful of bicarbonate of sodium; placing the child on its stomach on the nurse's lap, he greases the catheter, and introduces it gently into the anus, and allows the water to flow while he gently but firmly pushes the tube into the intestinal canal, overcoming obstructions with gentleness and patience, until it reaches the transverse colon or can be introduced no farther; it is then held quietly until about a quart of water has passed; there is no distention, the pressure on the child's stomach expelling the water.

The author sometimes uses half a grain of bichloride of mercury to the quart of water, using a pint of plain water afterwards to avoid poisoning. He advises this irrigation every three, four, or five hours. It removes the bacteria, mucus, undigested food, and fermenting material, soothes and quiets the patient, and changes the whole aspect of the case. The author does not favor the internal use of antiseptics, as salicylate of sodium and naphthalin, since to sterilize so extensive a surface would require a quantity too large to be compatible with safety. He has used one sixty-fourth of a grain of bichloride of mercury, and large doses of bismuth, chiefly in subacute and chronic cases, the former when the stools were clayey and offensive, the latter when they were thin and choleric, and had good results; but of late years he has aimed to eliminate medicinal treatment from acute summer diarrhoea.

The integrity of the stomach must be maintained, and as soon as it is restored, food is the great desideratum. Medicines should be administered per rectum, if possible, or avoided altogether.

To meet the fourth indication, the author offers several suggestions. The prostration of the vital powers, which is often so rapid as to threaten a speedy and fatal issue, being due to the high temperature, is to be combated by reducing this temperature; the best method being the graduated cold bath, reduced from 95° F. to 80° F., and continued until the thermometer in the rectum registers a decided fall of temperature; after the bath wrap the child from the neck to the knees in a sheet wrung out of the bath-water, and place hot bags to the feet.



The inanition from the diarrhœa must be met by a cautious selection of food, and the author prefers some prepared milk-food containing a proper proportion of dextrin and sugar of milk. He advises alcoholic stimulants as aids to tide over the danger of collapse and debility. He has little confidence in the various astringents, but believes, after all irritating matter has been removed, opiates are the most valuable measures for allaying the irritation of the intestinal canal and comforting the patient.

Meigs: Dietetic Management of the Summer Diarrhœa of Infants. (*Medical News*, July 7, 1888.)

In treating a case of any form of summer diarrhœa, the author believes the first attention should be given to the food. If that be the breast-milk of a healthy woman, and the child has previously thriven upon it, he sees no reason for depriving it of that nourishment. As adjuvants he advises water, stimulants, and perhaps some supplementary food. As the system requires water, the child becomes thirsty and fretful; to satisfy this thirst it nurses, thereby getting too much food and overtaxing the irritated stomach; hence, give water systematically in all cases of summer diarrhœa. The author regards stimulants as more nearly allied to dietetics than to therapeutics. He advises the use of stimulants in all severe cases of summer diarrhœa, giving a teaspoonful of good brandy or whiskey in a tumblerful of water three or four times a day, or thirty drops in sweetened water every two hours, according to the stage of the disease and indications. As an adjunct to the mother's milk or the artificial food the author advises half an ounce of raw-beef juice with a pinch of salt in it two or three times a day, or one or two ounces of wine whey at similar intervals.

In summer diarrhœa occurring in hand-fed children the condition of the food, as found in the bottle from which the infant takes it, must be carefully investigated. The author cannot see the advisability of removing all milk-foods and putting the child upon an exclusive diet of meat-broth. As the basis of almost all infants' foods is cow's milk he urges the importance of seeing that it is properly prepared both in health and disease. As the percentage of caseine is much larger in cow's than in human milk, the cow's milk must be diluted with water; but as this reduces the amount of fatty material that must be restored by the addition of cream, sugar must be added, since the amount in cow's milk normally is less than that in human milk, and, lastly, lime-water must be added to make the acid cow's milk alkaline. To effect these changes the author advises the following method of preparation:

Place one quart of milk in a narrow, tall vessel and let it stand for three hours; pour off slowly the upper pint which contains the greater part of the fat or cream. Mix together three ounces of this cream, two ounces of lime-water, and three ounces of sugar-water (which is in the strength of eighteen drachms of milk-sugar to a pint of water) for each feeding; this should be prepared freshly each time, the amount being proportioned to the age and health of the child, the amounts given above being for a healthy infant between two weeks and six to nine months of age. Do not increase the strength of a child's food until the child is six months to a year old.

Of the four ingredients that enter into the preparation of cow's milk the sugar of milk is the least essential, and often the substitution of cane-sugar is advisable, the proportion of which should be one-third less. In this relation the author alludes to a food used with success in summer-complaints at the Children's Hospital in Philadelphia, consisting of equal parts of milk, cream, lime-water, and arrow-root water, and a small quantity of cane-sugar; the arrow-root water is one teaspoonful of arrow-root flour to one pint of water. Among other starchy materials that can be used with advantage are the old flour ball, barley prepared as recommended by Dr. Jacobi, and Mellin's food, this last in the proportion of a teaspoonful to four ounces of whatever milk-food is being used, adding it directly to the milk while warm. As regards the frequency of feeding in summer diarrhoea, unless the case is severe, the author does not believe there should be any change, but gives as his rule in severe cases from half an ounce to three ounces every two hours. If the case is critical, or collapse or other sudden termination seems imminent, stimulants which act quickly will be better than food. Another important fact which the author urges is, do not change the food because the child does not immediately show a marked improvement.

The author alludes to the recent work that has been done in the study of the micro-organisms and chemical poison which exist in milk, but asserts that he cannot accept the view that *all* cases of acute cholera infantum are due to these micro-organisms or a chemical poison or both, because the disease so often attacks infants nursed by a healthy woman whose milk is above suspicion of disease in any form. He adds that the exclusively animal diet is an old treatment that has been thoroughly tried by competent men, and while in some few cases it succeeded, in the great majority it signally failed. The trouble the author met with was to get the child to take the soups, or if he did so to get him to retain them, whereas he would take the milk and thrive upon it. This latter fact im-

pressed the author of the fallacy of the theory of the micro-organisms, since the milk being the regular medium for the life and growth of these bacteria, the feeding of this milk to the child should cultivate the disease and endanger the child's life instead of producing the opposite effect.

**Kolischer: A New Means of Treatment in Localized Tuberculous Processes.** (*Jahrb. f. Kinderh.*, xxxvii. 4.)

The question had occurred to the author, whether it were not possible to produce calcification of tuberculous foci by the artificial use of lime salts, thus imitating the method of nature in producing the spontaneous healing of tuberculous deposits in the lungs; and also whether a sufficient degree of irritation could not be excited in the tuberculous focus to cause cicatricial contraction of the fungous granulations. A solution of calcium for such a purpose should be as concentrated as possible, and should be sufficiently stable so as not to part with its calcium as soon as it comes in contact with the tissues. Such a solution had been prepared by Freund in Ludwig's laboratory, and was an acid phosphate of calcium with an excess of phosphoric acid. Injections of this solution into tuberculous deposits were followed by reactions of two kinds: in one there was a short reaction lasting from four to seven days, and followed, in two to four weeks, by a decided contraction and induration, the latter disappearing after a few weeks, and the joint (an accumulation in a joint having been injected) resuming its normal contour; in the other there was a breaking out of the fungous mass, which was followed by a rapid healing under constant treatment with the calcium solution. In the place of the fungous matter thrown out good granulations were developed, which healed with cicatrization. In carious conditions the treatment was often followed by the formation of a sequestrum. Cold abscesses, fungous ulcerations, and tuberculous fistulæ were treated with tampons of gauze impregnated with the solution, under antiseptic precautions, and with good results. As to the methods of treatment, fungous accumulations which had not ulcerated were covered with sublimate applications for twenty-four hours, then carefully washed with soap and a one-per-cent. solution of sublimate, after which the solution of calcium was injected. A hard-rubber syringe with platinum needles was used, the instrument having first been washed in a five-per-cent. solution of carbolic acid. A number of punctures were made until the entire mass was permeated by the solution, the needle being carried to the bone or even into the bone. The sound bone was distinguished from the diseased by the fact that in the former the needle



produced a grating sound and caused bleeding, but not in the latter. The injections were painful and were followed by rather severe pains, lasting several hours, which often necessitated the use of subcutaneous injections of morphine. Antiseptic bandages were applied after the injections; there was usually fever, lasting twelve to twenty-four hours, and the entire reaction lasted five or six days. After three to six weeks of rest, massage and passive movement were practised until the joint resumed its function. If fungous masses appeared after the injections they were cut away, the cavities were tamponed with gauze impregnated with the solution, and the joints were covered with antiseptic bandaging. The tampons were renewed every two days and the granulations cauterized if they became too exuberant. The treatment was the same even in cases in which necrosis of the bone was extensive, sequestration being awaited. Cold abscesses were freely incised, evacuated, and tamponed. In cases in which fungi had protruded before treatment was instituted, the openings were enlarged, the walls of the cavities injected with the solution, and a tampon of gauze introduced, the strength of the solution with which the gauze was impregnated varying with the degree of torpidity of the fungi.

A. F. C.

Legroux and Dupre: Antipyrin and Chorea. (*Rev. Mens. des Mal. de l'Enf.*, March, 1887.)

The analgesic properties of antipyrin have been demonstrated by Germain Sée: the authors have demonstrated in a series of cases of chorea in which it was used by them, that it is also able to control that disease. Admitting, as has been shown by A. Robin, that antipyrin acts directly upon the central nervous system, moderating its excitability, and acting upon its elementary nutrition, also accepting the statement of Dujardin-Beaumetz that, like all the anti-thermic nervines this agent should be a sedative to cerebro-spinal excito-motor actions, the authors were led to experiment systematically in respect to the treatment of chorea. The treatment for this disease has not, heretofore, been of a satisfactory character. It is very questionable whether it has been of any service at all in many cases. Germain Sée and Roger have stated that treatment should continue sixty-nine days, while Cadet de Gassicourt finds it necessary to continue it for ninety days.

The result of the authors' experiments is that antipyrin has been proved to be one of the most rapid, certain, and inoffensive agents for the treatment of St. Vitus's dance, whether occurring before or after puberty. Six cases are narrated, in all of which the attack was controlled by antipyrin, but in

one of them it returned. Fourteen other cases were subsequently treated with success, but the detailed account is withheld until it has been definitely determined whether there is to be any recurrence. The usefulness of the drug in this disease seems assured. Diminution of the abnormal movements will usually begin in four to six days,—that is, after twelve to eighteen grains of antipyrin have been taken. In the cases narrated the patients were soon able to sleep and eat with comfort and advantage, the grimaces and gesticulations gradually disappeared, and the children began to assume the appearance and behavior of health. In a few of the cases the drug seemed to produce a temporary gastralgia; in others, lumbar pains, or sweating of the feet and hands. In a few cases there was also an eruption which resembled that which is caused by copaiba. The drug was usually given in doses of fifty centigrammes five or six times daily, in a suitable medium. Bouchut and Riess have recently recommended subcutaneous injections of sulphate of physostigmine, one-half to two milligrammes being used daily. By this agent they assert that they have been able to cure chorea in thirty-four days. These results compared with those of the authors speak volumes in favor of antipyrin.

A. F. C.

Parkes: The Communicability of Tubercle through Cow's Milk. (*British Medical Journal*, April 21, 1888.)

That cow's milk is not uncommonly a vehicle for the transmission of infectious diseases to the human subject is now well understood.

Cattle are susceptible to tubercle; and stall-fed dairy cows are frequently found to be affected. Prolonged lactation in the human female is well known to be a precursor of phthisis; and it is not to be wondered at that cows succumb to this malady when subject to prolonged lactation, confinement in close quarters, want of exercise, and bad air.

So far as known at present the milk of tuberculous cows is free from tubercle-bacilli unless there exists tubercular disease of the udder.

Milk containing tubercle-bacilli when given to guinea pigs and rabbits causes tubercular deposits in the follicles lining the intestinal wall,—followed by tubercles in various organs, and, finally, general tuberculosis. Milk which is free from tubercle-bacilli, although derived from tubercular cows, has not produced tuberculosis in calves and other animals.

It may be fairly assumed, in many of these cases of primary tubercular ulceration of the intestines or tuberculosis of the peritoneum and mesenteric glands, that the virus has been intro-

duced in the food ; and the absorption has taken place through some part of the digestive tract. The frequency of primary tuberculosis of the intestine is much greater in children than in adults. Statistics show it to be four times as great. In children, milk, usually unboiled, forms the staple article of food.

In almost every town-dairy there are cows with tubercular deposits in the udder. It is the common custom of dairymen to mix together the milk of different cows. It is not too much to assume, therefore, that tubercle-bacilli may be widely distributed in the milk-supply of any town.

To the objections that tuberculosis of cattle and man are different, it may be said that the bacilli are identical, and that the anatomical differences of the diseased tissue may be explained by the differences in the soil of human and bovine tissue.

Secondly, absence of proof may only mean want of observation, and cannot be held to imply that in the future satisfactory evidence of the dependence of the human disease upon a bovine source will not be discovered.

The time has come when a change is urgently needed in the production and consumption of milk. It should be illegal for cows known to be suffering from tuberculosis to be kept in stock for milking purposes ; and, secondly, no unboiled milk should be consumed, especially by children.

From recently-acquired knowledge there is as much danger in drinking unboiled milk as in eating raw flesh.

Exposure to the heat of boiling water for five minutes destroys the life and action of the tubercular virus (Klein) ; and the same is true of the other specific disease-poisons.

By such simple means, then, it is possible to guard against an ever-present source of danger, as well as to obtain protection from those known possibilities of the introduction into our bodies of the viruses of enteric fever, scarlet fever, and the like.

Morgan : A Case of Opium-Poisoning in an Infant One Month old : Artificial Respiration : Recovery after Forty-five Hours. (*British Medical Journal*, April 21, 1888.)

The child had been given three drops of laudanum. When seen, eight hours afterwards, it was in a semi-comatose condition. The respiration was very faint and became gradually fainter until it ceased. Artificial respiration was immediately resorted to, and this, together with hot flannels, induced the child to breathe again. This continued one and a half hours, when a relapse occurred. Artificial respiration and a hot bath followed by a cold douche, together with constant friction, kept her



awake for two hours, when she relapsed again into a comatose state. The effect of the drug had not in the least worn off eighteen hours after its administration.

Artificial respiration again was successful in inducing breathing; but the pulse and respiration were scarcely perceptible. In this condition she remained nineteen hours, during which time she was fed by nutrient enemata. Forty-five hours after the laudanum had been given she woke up of her own accord. She made a rapid recovery.

**The Nasal Origin of Whooping-Cough, and its Treatment.** (*Le Médecin* [editorial], March 4, 1888.)

An important chapter in pathology has been created within the past few years, namely, that which refers to the reflexes of nasal origin. Since 1873, when Voltolini showed the relations subsisting between asthma and mucous polypi of the nose, several memoirs upon nasal neuroses have been published in Germany, America, and France. Among them is that of Hack, of Freiburg, which was published in 1883, and demonstrated that certain nasal lesions, especially hypertrophy of the lower segment of the mucous membrane, could cause by reflex action: (1) asthma and hay fever; (2) laryngeal spasm; (3) cough; (4) certain forms of neuralgia, especially hemicrania; (5) redness and swelling of the skin of the nose; (6) attacks of vertigo; (7) attacks of epilepsy; (8) anomalies of secretion. These different neuroses disappeared after destruction of the cavernous bodies of the nose by means of the galvano-cautery. Michael, of Hamburg, published in 1885 his views concerning the reflex-nasal origin of whooping-cough, and the method of treatment which he had adopted. He used neither chromic acid, nitrate of silver, nor the galvano-cautery; he objected to naso-pharyngeal douches as difficult of execution in children, and liable to produce otitis media. He found that the insufflation of suitable powders accomplished the desired end, and experimented with tannin, boric acid, iodoform, and benzoin. The last of these was the most serviceable of any.

Michael treated fifty children by the method of nasal insufflation, the result being a diminution in the number and violence of the paroxysms after the first treatment. In a number of cases the disease was limited to its first stage by this plan. Only one insufflation daily was practised, the powder being injected during expiration to prevent its entering the mouth or larynx. Michael's theory is that whooping-cough is a parasitic disease, and that the insufflated powder acts upon the infectious element and thus produces a curative effect. Guerdner has also employed this method, using a powder composed

of equal parts of boric acid and roasted coffee. The results with him also were that the paroxysms diminished in frequency and in intensity, and also that the general condition began at once to improve. Bochem treated sixteen children successfully with insufflations of a powder composed of three parts of muriate of quinine to one of gum-arabic. Lublinski, Stoerk, and Ziem have been equally successful with, and are equally favorable to, this method of treatment.

A. F. C.

(Mensinga: Inability to perform the Function of Nursing, and the Way to cure it. (*Jahrb. f. K.*, xxvii. 4.)

The causes of this inability may be considered as peripheral, central, and organic.

1. Peripheral causes are general bodily weakness, chronic diseases, wasting diseases, acute febrile diseases, anticipated pregnancy, and conception during lactation.

2. Central or psychical causes are general depression, anxiety, fright, etc.

3. Organic or local causes are deficient development of the mammary glands or nipples or diseases of either.

Every new-born female child comes into the world, as a rule, with mammary glands which are suitably organized for subsequent functional activity. Pressure from the body outward upon the glands serves as a means for developing them during childhood. When undue pressure from the clothing and its accessories is exerted, as is so often the case in the later stages of childhood, development of the glands, or at least of the nipples, is hindered. This having been the case, when marriage and subsequent parturition have occurred the breasts are found incompetent for the proper functional action.

The author has devised an artificial bosom to prevent the venous outflow from the glands during pregnancy, and so to prepare them for lactation. It constitutes a segment of a hollow, perforated rubber ball, the border of which is provided with a ring resembling an air-cushion. The use of this instrument, which is designed only to effect a venous stasis, must be combined with massage and the use of a fatty soap, the object of the latter being to stimulate the arterial supply. In some cases the use of aloes must also be insisted upon, and the breasts must be washed and rubbed with cold water. The result of this treatment is favorable both to the stroma of the glands and to the nipples; it will also tend to prevent inflammatory processes. If inflammation has begun during lactation, massage in a reverse direction should be practised in order to empty the glands of the milk which they may contain.

A. F. C.

**Stumpf: Sublimate in the Treatment of Diphtheria.** (*Rev. Mens. des Mal. de l'Enf.* [abstracted], March, 1888.)

After having lost seventy-six per cent. of his cases of diphtheria in an epidemic, which lasted from May, 1883, to March, 1884, the author began, in December, 1884, the practice of inhalation of a solution of sublimate. His first patient was a boy two and a half years old, whose pharynx was covered with a deposit of diphtheritic membrane. Every three hours the pharynx was moistened with a solution of this substance applied by means of Richardson's atomizer. In a few days the child was completely well. Subsequently thirty-one cases were treated entirely with this agent, the cure being rapid and complete in twenty-nine of them. One patient, a boy nine years of age, succumbed four weeks after the beginning of his attack from a complicating disease; another, eight years of age, died after he had received only two treatments. In most of the author's cases, after the treatment had been continued twenty-four to forty-eight hours, the temperature, which had been  $40^{\circ}$  to  $41^{\circ}$  C., declined to normal without the use of any other antipyretic. At the same time, it became evident that the development of the false membranes had been arrested, a fine line of demarcation appearing at the border of the healthy mucous membrane of the pharynx; the difficulties in deglutition also became less marked, and the children showed a desire to eat and drink. By the end of three to five days the false membranes could usually be readily detached. In no case were there any phenomena of intoxication. In one case there was excessive secretion of the salivary glands which lasted three or four days. For children over six years of age, two decigrammes of sublimate were used to two hundred grammes of water; between the ages of two and six, one decigramme to the same quantity of water; for those under that age, five centigrammes to two hundred grammes of water.

A. F. C.

**Lenhartz: Poisoning with Chlorate of Potash.** (*Jahrb. f. K.*, xxvii. 4.)

The experiments of Stokvis showed that poisoning with chlorate of potash was simply a toxic gastritis such as may be produced by a concentrated solution of any salt, the subsequent icterus being a consequence of gastro-intestinal catarrh. Marchand denies the statements of Stokvis and re-establishes the position which he took some time ago, that the drug acts upon the blood, the oxyhæmoglobin being converted into methæmoglobin. Lenhartz cites a case in his own experience which confirms in his opinion the position of Marchand. In this case there was no toxic gastritis nor hepatogenous icterus; there



was an enlarged spleen and cyanosis, which should not follow simple toxic gastritis. There were also bright yellowish brown particles and conglomerations in the urine, which were the product of destructive changes in the red blood corpuscles, and there was no toxic nephritis until the sixth day, though the changes in the urine were apparent on the first after the ingestion of the drug. On the fifth day spectroscopic examination showed no considerable abnormality in the blood, but the urine was rich in iron, which could only have been a resultant of destructive blood changes. The author's patient had suffered from kidney disease six years previously, and there had been a recurrence six weeks before the use of the potash salt. This may have had some influence upon the action of the latter. In this case also the potash was only used as a gargle and to the extent of not more than twenty grammes. Death was not the immediate result of poisoning, but followed the kidney disease with its attendant uræmia.

A. F. C.

Demme: The Effect of Antipyrin in Acute Articular Rheumatism and Erysipelas; also the Effect of Thallin in Rheumatism. (*Jahrb. f. K.*, xxvii. 4.)

In a case of rheumatic polyarthritis complicated with endocarditis in a girl nine years of age, the first attack was treated with large doses of salicylate of soda, and the second with antipyrin, gramme to gramme-and-a-half doses being given two or three times daily. The first attack lasted twenty-two days, the second twenty-eight; the temperature was readily controlled by the antipyrin, the swelling and pain in the joints were equally well influenced by both means of treatment. Inclination to vomit was increased by the soda, and diminished by the antipyrin. The diuretic effect of both drugs was the same.

In a second case of acute articular rheumatism in a boy fourteen years of age, treated like the first, the soda salt again acted rather the more promptly, but the appetite, the digestion, and the general condition were the more favorably affected by the antipyrin. In two other cases the antipyrin also worked very efficiently, but in another the desired effect was not obtained until the soda salt was substituted for antipyrin.

In a sixth case, a boy fourteen years of age, in which acute rheumatism was complicated by gonorrhœa, the fever, swelling, and pain were quickly relieved by antipyrin. From the foregoing it would appear that antipyrin acts readily upon acute articular rheumatism, but somewhat less promptly than salicylate of soda. If an attack is accompanied by high fever, it is recommended that antipyrin be first used, and subsequently salicylate of soda. The long-continued use of small, daily doses

of antipyrin will have a tendency to prevent recurrences of rheumatism.

In another series of cases, it was found that the effect of antipyrin in erysipelas was analogous to that in rheumatism; but it could not be decided that it had any specific effect upon that disease. An eruption like that of measles may result from the use of antipyrin, but in only one case did the author observe associated febrile symptoms.

With tartrate of thallin the author treated sixteen cases of articular rheumatism and other diseases in children, the dose being one decigramme for those who were over five years of age and two and one-half to five centigrammes for those from two to five. It was given hourly until the fever declined, from three to five doses being usually required. Perspiration was more free under its use than with antipyrin, and in some cases there was cyanosis of the cheeks, mucous membranes, and nails. When the temperature began to rise again there was sometimes an accompanying chill. With very young children the use of thallin was sometimes marked by watery stools and colicky pains, and in four cases the urine became albuminous and contained epithelial casts. Collapse from thallin and an eruption on the skin from its use were never seen. Collapse may be avoided by giving only small doses, repeating them at sufficiently frequent intervals until the desired end is obtained. Antipyrin is to be preferred to thallin for the treatment of febrile diseases in children, for it reduces temperature more decidedly and for a longer period, and with less disturbance to the system at large.

A. F. C.

Demme: *The Use of Salol in the Diseases of Childhood.* (*Rev. Mens. des Mal. de l'Enf.* [abstracted], April, 1888.)

The author has used salol in four cases of acute articular rheumatism, in two of acute endo- and pericarditis accompanied with articular fluxion to a moderate degree, and in two of catarrh of the bladder; also a topical application in two cases of burns. In the first two patients with the acute rheumatic polyarthritides, two boys of eight and thirteen years of age, the salol was given as long as the febrile symptoms persisted, as well as the swelling and redness of the joints, in doses of three or four grammes daily. This dosage was continued with the first for five and the second for seven days, the dose being reduced to two grammes and then to one gramme during convalescence. In the third case, a girl of seven years, in which all the articulations were swollen, and the fever was considerable, twenty-grain doses of salol were given, and in forty-eight hours the intensity of the process had greatly diminished. The fourth

patient was a girl nine years of age, who vomited the first dose of salol which was given. An enema, containing two grammes of salol, was then given, but in eight or ten hours an urticaria appeared which involved the entire surface of the body. The salol was suspended, and two days later a dose of salicylate of soda produced an eruption similar to that produced by the salol.

Antipyrin was then given in gramme doses, and in five days the rheumatism disappeared. In the two cases of endo- and pericarditis salol produced a favorable effect only when the cardiac action and intravascular pressure had been regulated by digitalis. The first of the two cases of catarrh of the bladder was caused by cantharides in a boy five years of age. The salol was given in doses of one gramme, and this was gradually increased to two and one-half grammes; after two days the urine became acid, more abundant, and caused less pain in its passage. The case was cured in fifteen days. The second case was chronic cystitis following measles, and was equally well treated with salol. In the two cases of extensive burns the salol was mixed with an equal quantity of talc powder and dusted upon the wounds, which quickly cicatrized.

A. F. C.

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## II.—MEDICINE.

Vaughan: Summer Diarrhoeas of Infancy. (*Medical News*, June 9, 1888.)

The author discusses this subject under six heads. *First.* The most frequent cause of summer diarrhoea in children under two years of age is to be found in the food. This is due indirectly to the high temperature, by which the germs of putrefaction are disseminated so as to find their way into the food, drink, and air, so that fermentation of the food occurs before it enters the stomach; and frequently, because of the temperature, the germs will find conditions in the stomach favorable to their growth. Again, this high temperature so depresses the nerve-centres as to lessen the amount and alter the quality of the normal secretions of the stomach and upper intestine, thereby so altering the tone of the tissues as to prevent their resisting toxic agents.

*Second.* The changes in the food, before or after it enters the body, are fermentative or due to micro-organisms. The author shows that healthy cow's milk, like healthy human milk, is free from germs when it leaves the udder, and that the fermenta-



tion is due to absorption of germs from exposure to the air. Human milk can become unhealthy through diseases of the mother or lack of cleanliness, and be the cause of diarrhœas in breast-fed children; and the child may introduce the germs into his system through his habit of tasting everything he touches, and so contaminate the healthy milk that enters his stomach. This is more evident if it is true, as claimed, that the child's stomach is more a receptacle for receiving and coagulating the milk than a digestive organ, and that the digestion of the milk is accomplished almost entirely in the small intestine.

*Third.* While all summer diarrhœas of infancy are bacterial in origin, the same bacterium is not present in all. The microorganisms of catarrhal or mucous diarrhœas are only putrefactive, while those of choleric form or serous diarrhœa—true cholera infantum—are more than putrefactive: they are pathogenic, producing a definite chemical poison, the absorption of which is followed by the symptoms of the disease. This is manifest in the difference between the two diseases in symptomatology and pathology; the one is insidious, the other sudden, and even if the choleric form develops in the course of the catarrhal, the symptoms change at once and suddenly. The most pronounced early effect of the poison of catarrhal diarrhœa is as a local irritant; the poison of choleric form diarrhœa acts immediately on the nervous system, most probably the sympathetic. Bacteriologists are seeking to isolate these microorganisms, and claim to have found the "bacillus of green diarrhœa," for which they offer lactic acid as a germicide.

*Fourth.* The bacteria which produce these diseases prove harmful by splitting up complex molecules and forming chemical poisons. It is known now that germs cause disease by elaborating chemical poisons, some of which are powerful in action, are rapidly absorbed, and manifest their effects upon the central nervous system; others are less powerful, and act primarily as local irritants, inflaming the tissues and leading to necrotic changes. In the former class the author puts choleric form diarrhœa, in the latter catarrhal diarrhœa. The author thinks that in tyrotoxicon we have the chemical poison or ptomaine of genuine cholera infantum. He is led to this conclusion from the similarity of symptoms; from the fact that this ptomaine results from the putrefaction or bacterial fermentation of milk; that tyrotoxicon has been found in the milk given to a child immediately before the appearance of symptoms of choleric form diarrhœa; that the symptoms increase if the milk is continued, and abate if it be withdrawn; and, lastly, because the post-mortem appearances are identical.

*Fifth.* The most efficient preventive treatment of summer diarrhœas will consist in giving more attention to the food, methods of feeding, and to the sanitary surroundings of children during the first two years of life. In regard to the food, the author urges the use of the mother's milk or that of a healthy wet-nurse, because it is better adapted to the child's wants, is more easily assimilated, is less likely to undergo fermentation in the child's stomach, and there is less chance of the child being overfed, which factor the author argues is so often the cause of digestive troubles in artificially-fed children. If necessity compels the use of artificial food, the choice should fall upon cow's milk properly prepared, the excess of proteids corrected by dilution with water, the casein partially digested, but by no means completely digested, and the carbohydrates restored by the addition of dextrin. Care should be given to the amount of milk the child receives and the regulation of the hours of feeding; the giving occasionally of a little water to drink; the proper handling of the milk to avoid fermentative changes; and, lastly, strict hygiene regarding the dwelling and surroundings of the child.

*Sixth.* In the curative treatment of the summer diarrhœas of infancy the destruction of the bacteria which are causing the abnormal fermentation is a necessity. To obtain this the author in the first place withdraws the source of their growth, viz., the milk, and substitutes in place of it some food that is not compatible to the germs, such as meat, beef-tea, or solution of egg-albumen. Next, the stomach is to be washed out with some antiseptic solution, the alimentary canal cleansed by free doses of castor oil in the early stages, and as medicines germicides. The author gives the results of experiments with the different germicides as follows: one part mercuric chloride in twenty-four thousand parts of milk is sufficient to prevent the activity of the tyrotoxicon-producing germ. One part of naphthaline in two hundred parts of milk is wholly without effect. Sodium salicylate and resorcin were efficient in proportion of one part to about two hundred; in less quantities they were not.

Cadet de Gassicourt: Initial Pultaceous Angina in the Course of Typhoid Fever. (*Jour. de Méd.*, February 5, 1888.)

Angina in typhoid fever appears in three varieties, catarrhal, ulcerative, and pultaceous. It may appear either at the beginning or during the course of the disease. The frequency of angina in typhoid fever varies in different epidemics. When it appears during the course of the fever, the diagnosis of

typhoid fever is already made, and the angina seldom adds to the gravity of the condition. But if it appears at the beginning of the disease, it is a complication which leads to embarrassment as to the nature of the morbid condition and the course which it will be likely to follow. Under such circumstances it is desirable to differentiate between the three varieties of the disease. The catarrhal variety need not give rise to any anxiety as to the result, but that is not the case with the ulcerative and pultaceous forms. The former was carefully studied by Louis in connection with his investigations concerning typhoid fever, but only from its pathological-anatomical standpoint. Recently it has been studied by Vaissen, Derignac, Rendu, and Duguët, and they have published cases in which the ulcerated condition of the throat suggested tuberculosis and syphilis, but which proved to be the primary localization of typhoid fever. The pultaceous form has been studied by the author, and three cases are narrated showing different aspects of it. The first was in a boy seven years of age, who showed two or three small white patches upon each tonsil, on a red base. There was fever of moderate intensity, and the diagnosis of herpetic angina was made. The following day the pultaceous deposit was more abundant, but the fever continued, and was prolonged during seventeen days. There was an absence at the beginning of the ordinary symptoms of typhoid fever.

The second case was that of a girl ten years of age, who showed redness of the tonsils, of the anterior pillars, and of the velum. All these tissues were covered with a thick, pultaceous deposit, and the submaxillary glands were swollen. The febrile condition was pronounced, and the diagnosis was scarlatina. As no eruption appeared, and the temperature oscillated, the diagnosis was changed, two days later, to typhoid fever.

The third case was that of a boy twelve years of age, who was violently delirious when first seen. The temperature was high, the face congested, and the submaxillary glands swollen. The tonsils and velum were red and swollen and covered with a thick exudate. There was also slight diarrhœa and some tympanites. The following day the condition was unchanged. The next day, as a result of proper treatment, the exudate had disappeared, but the delirium remained, and the case soon appeared to be one of undoubted typhoid fever, which was subsequently complicated with double bronchopneumonia, and ended fatally. These cases were narrated to show the difficulties in differential diagnosis at the beginning of the disease.



Delthil: The Relations of Diphtheria in Animals to the Same Disease in Man. (*Jour. de Méd.*, February 19, 1888.)

No one questions the contagiousness of diphtheria in man. Like all septic diseases, diphtheria does not produce results which are necessarily fatal, for some individuals are insusceptible to the action of its virus. The common law in regard to its evolution is, it must find individual, family, and local conditions of receptivity which are favorable. In regard to its transmissibility:

1. Some authors believe in infection only through the medium of the atmosphere, by inhalation.

2. Others admit infection by the atmosphere, and believe also in contamination by direct contact, either by application of a surface denuded of epidermis or at least of epithelium to a diphtheritic focus, or by the projection of diphtheritic elements upon a denuded surface.

3. A few writers believe that contamination is possible at long distances and without direct contact; a number of well-authenticated cases are recorded in which infection occurred in this way.

4. Within the past few years evidence has been presented of the identity of diphtheria in animals and man and its transmissibility from the one to the other. Cases have been reported in which pigeons and rabbits have been successfully inoculated with diphtheritic matter, and by such competent observers as Trendelenburg, Oertel, Zahn, Gerhardt, Labadie, Lagrave, and Francotte. On the other hand the possibility of infection in such a manner has been denied by Troussseau, Raynal, Bouley, Peter, Magnin, Homolle, Duchamp, and others.

Lœffler and Cornil have found in diphtheritic exudate obtained from birds micrococci resembling those which have been found in the false membrane obtained from human beings, but they have not been willing to conclude that the disease in animals and man is identical. Delthil inclines to the opinion that the increasing volume of clinical observations tends to demonstrate the quasi-certainty of transmissibility of the *contagium* from pigeons and rabbits to man, even in cases in which the virus from the animals is transmitted *post mortem*. The author stated in a paper read in 1886 that the saliva from diphtheritic patients is usually acid, and that it is owing to this acidity that the laryngeal and pulmonary tissue shows its initial receptivity to the diphtheritic virus. He also believed that the period of incubation of diphtheria averages five days. A number of cases are narrated in which transmission of diphtheria from animal to man seemed extremely probable, and the following conclusions are drawn:

1. The identity of diphtheria in animals and man is probable.
2. Transmissibility from the one to the other can be shown.
3. It is possible that diphtheria may be transported a long distance by a third person, who remains unaffected by the disease.

A. F. C.

Müller: Investigations concerning Icterus. (*Arch. f. Kinderh.* [abstracted], ix. 3.)

During a period of several years the author made investigations upon the fæces of children who had suffered from icterus, from diseases of the pancreas, or from those of the absorbent apparatus of the intestine. The patients whose cases were studied were placed upon milk diet after having fasted for eighteen hours, or in some cases a small portion of white bread was given with the milk. In order to distinguish the fæces resulting from digested milk from that which came from food eaten previously to the first portion of milk, each patient began the milk diet with a draught from a mixture containing,—

Carb. vegetab., 10 grammes;  
Mucil. gum. Arab., 10 grammes;  
Aq. menth. pip., 60 grammes.

This mixture gave to the first specimen of fæces examined an intense and uniform black color. The nitrogenous contents of the fæces were determined from the dried substance, which was extracted with ether if necessary. The fat was also recovered from the dried substance. The process was a complicated one, but it gave results which were entirely accurate. These investigations were performed on three healthy and ten diseased persons, three of the latter suffering from chololithiasis, two from catarrhal icterus, one each from echinococcus of the liver, carcinoma of the stomach, atrophy of the pancreas with diabetes mellitus, cyst of the pancreas, and tabes mesenterica with tuberculous peritonitis. In eight of these cases autopsies were held, and the author was enabled to inform himself most accurately as to the degree of obstruction to the secretion of the liver and pancreas. The conclusions were the following: When the intestine is deprived of bile there is very little change in the extent to which albuminoids are absorbed; no change with regard to starches; but the difference with regard to fats is considerable. In cases in which there was a total absence of the bile, 55.2 to 78.5 per cent. of the fats which were taken with the food were recovered from the fæces, while only 6.9 to 10.5 per cent. of the fats were recoverable from the fæces of those with whom the functions of the

liver were properly performed. In those cases in which the pancreatic secretion was shut off from the intestine the digestion and absorption of starches was not interfered with, while the digestion of meat was slightly delayed. In no case was there an increased quantity of fat in the fæces. On the contrary, the pancreas is the only gland in the digestive tract which furnishes a secretion capable of splitting up neutral fats. It appears, therefore, that in diseases of the absorbent apparatus of the intestine the fats are the elements which are most affected. The existence of needle-shaped crystals in the fæces shows that the fat-absorbing power has been interfered with. These crystals consist of free fatty acids, as well as lime and magnesia soaps, derived from the fatty acids of the higher equivalences.

A. F. C.

Cook and Beale: A Case of Rapidly Fatal Chorea; Death in One Hundred and Thirty Hours. (*British Medical Journal*, April 14, 1888.)

The patient was a child, aged nine, and was already suffering from chorea when she came under observation. Her history showed that there was noticed first some loss of control over the right arm and leg. On the morning following this there was some twitching of the muscles of the eye and mouth. This was soon followed by general irregular movements, most marked on the left side.

After the child came under observation it took little food, slept badly, and was slightly delirious,—occasionally screaming and complaining of pain in the right hypochondrium. The child had been fairly healthy and no cause for the attack could be ascertained. During the day after admission the choreic movements rapidly grew worse. The pulse became very rapid, varying from 160 to 170. Respiration was only slightly increased.

On physical examination a short systolic murmur could be made out at the apex, which was in the normal position. Only a few scattered crepitations could be detected in the lungs.

On the following day the movements became so violent as to render restraint necessary to prevent injury. The bowels were freely open. The urine was passed involuntarily, but was free from albumen. The tongue was clean and moist, but the lips were dry and cracked. The temperature was slightly elevated, but never exceeded 101°. The heart-action continued rapid, and the pulse at the wrist became almost imperceptible. Before death the child experienced difficulty in swallowing and was delirious,—frequently screaming and uttering inarticulate sounds.



She died one hundred and thirty hours from the beginning of the attack. At the post-mortem examination both lungs were found to be much congested at the bases, and the left plura adherent. The right side of the heart was slightly dilated. On the auricular surface of the tricuspid valve were a few punctiform patches of congestion. The left ventricle was firmly contracted. On the auricular surface of the mitral valve, between the hinge-line and the free border, were numerous tiny patches of punctiform congestion. At the free margin of the valve the attachments of the chordæ tendineæ were much thickened by "lymph" vegetations, to a few of which slightly-colored fibrinous clots were attached. There was no positive ulceration of the endocardial surface to be detected. The brain and upper part of the spinal cord were healthy except for an extreme degree of anæmia at the pons and medulla.

The case was treated with arsenic, morphine, chloral, and bromides; but the action of the drugs appeared to have no influence on the course of the disease.

Raven: An Epidemic of Membranous Sore Throat of Non-Diphtheritic Character. (*British Medical Journal*, March 24, 1888.)

The author thinks that the reports of observations regarding the treatment of diphtheria must suffer in value when the clinical features of the disease are omitted. Some authorities hold that sore throat with membranous deposit sometimes occurs when it can be clearly distinguished from diphtheria; others hold that sore throat with membranous deposit is always diphtheria. The author has recently witnessed an epidemic in an institution containing eighty children. The appearance of the pharyngeal mucous membrane was indistinguishable from that of diphtheria. The cases were serious; the temperature averaged 105°; and relapses were common. The disease was extremely infectious, and it arose undoubtedly from the poisonous effects of sewer-gas.

During the epidemic albuminuria was never present; and afterwards there was not a single instance of paralysis or peripheral neuritis.

Had these cases been treated with the commonly-used remedies for diphtheria, the author would have been justified in recording the successful treatment of sixty cases of diphtheria. For under careful management the disease ran its course and all got well; and although chlorate of potash was freely used, the author does not attribute the recovery of the patients to its employment.

The author has witnessed other smaller epidemics which closely resembled diphtheria, yet all got well; and in no case were sequelæ of diphtheria manifested. The importance of clearly distinguishing diphtheria and exudative tonsillitis cannot be overrated in importance when drawing conclusions regarding treatment.

**Ashby: Infantile Paralysis.** (*British Medical Journal*, February 4, 1888.)

Dr. Ashby showed to the Pathological Society of Manchester sections of the spinal cord of an infant aged nine months, who had suffered from acute atrophic or "infantile" paralysis. The paralysis occurred about six weeks before death, which was caused by pneumonia. The onset of the paralysis, according to the parents, was somewhat sudden and accompanied by muscular twitchings and convulsions. The paresis of the legs was noticed first, then arms as well as legs; later the child could not sit up, and there was complete loss of voice.

The paresis of the limbs continued with but little improvement until death. An examination of the cord showed extensive changes in the cervical and dorsal enlargement; being well marked in the dorsal and upper cervical region. The vessels entering the anterior horns were gorged with blood and surrounded by many leucocytes. The gray substance contained fatty granules and detritus, which was very friable. The caudate nerve-cells had in many places completely disappeared; in other places they were undergoing degeneration. In the pons and medulla the perivascular spaces were enlarged, and the vessels gorged with blood.

**Watson: An Epidemic of Influenza following Measles in St. Helena.** (*British Medical Journal*, March 24, 1888.)

The severe character of the epidemic is attributed by the author to the lowered condition of the people after a severe epidemic of measles which prevailed in the island for five months. Only a few deaths occurred; but the prostration was very great, it being necessary to keep adults on the sick-list an average of about one month.

The symptoms were a chill going on to rigors, and ending in profuse perspiration. The chill usually occurred in the evening, and the sweating about six hours afterwards. There were pains in the forehead, chest, and legs; and a dry, hacking cough following the sweating. The temperature varied during the chill from  $105^{\circ}$  to  $101^{\circ}$ , and was about  $100^{\circ}$  afterwards. There was no coryza. The disease lasted about four days, and

ended in bronchial catarrh or bronchitis. One attack was a prevention against a second. The epidemic lasted about one month, during which time the author treated one thousand cases, with three deaths from pneumonia and bronchitis.

Coming so closely after measles, it has considerably lowered the physical powers of the inhabitants, and it is thought will increase the mortality, especially among infants, for several years to come.

Abercrombie: A Fatal Case of Hemiplegia due to Embolism in a Child. (*British Medical Journal*, January 14, 1888.)

The child, aged five years, had been in poor health, and had been sent into the country with apparent improvement, until two days before she came under observation, when she became paralyzed upon the right side. Upon examination she was found partly unconscious. The right side of the face and the right arm and leg were paralyzed. There was no strabismus, and the pupils were equal. The knee-jerk, plantar reflex, and ankle clonus were absent on the right side.

The breathing was slow and gradually became slower until the patient died asphyxiated.

At the autopsy the left middle cerebral artery was found to be completely filled by a black, dryish, non-laminated, non-adherent clot. The artery seemed healthy. The left hemisphere, especially in the motor region, was more pink and decidedly softer than the right in the corresponding region. There were some fine extravasations on the surface of the left caudate nucleus. The right middle ear showed superficial necrosis of the incus.

Near the free margin of the large mitral flap were found four minute whitish granulations, which were soft and easily removed, and appeared to be of fibrinous origin. In other respects the heart was healthy. Over the lungs there were some adhesions, and the bronchi were somewhat inflamed and plugged with mucus. There were no other evidences of disease discovered; and there were no infarctions in any of the abdominal viscera.

The author thinks that the clot must be considered of antemortem origin, although it showed no lamination and was not at all adherent to the arterial wall. The clinical facts alone justify this conclusion, apart from the fact that there was found in the heart on the mitral valve just such a condition of things as would have been most likely to lead to embolism. The early history of the case is a little incomplete, but there is some evidence that the child's health was below par; and the



whipping up of a little fibrin from the blood in the cavities of the heart may have been due to her impoverished condition. It is difficult to say why changes had not commenced in the clot, for it must have been sixty hours old at the time of death; but, excepting that it was rather dry, it had all the naked-eye appearances of a post-mortem clot. The softening of the brain, however, in the region supplied by the plugged vessel is sufficient evidence of the time of its formation.

Railton: Enlarged Spleen and Liver in Rickets. (*British Medical Journal*, March 17, 1888.)

Dr. Railton showed a child, eighteen months old, who suffered from rickets, and who had an enormously enlarged spleen, and also a considerable enlargement of the liver.

The child was perfectly blanched, and there was puffiness in the face and on the backs of the hands and feet. There was no history or appearance of syphilis. Lardaceous disease, cancer, tuberculosis and leucocythæmia were in turn considered and dismissed. The depth of the liver dulness in the right-nipple line was three inches; its surface was quite smooth, and its border was felt to be somewhat rounded but even. The spleen extended as low as the ilium, was four and three-fourths inches long, and three and one-half inches broad. There was no ascites, no enlargement of lymphatic glands, either internally or externally. The heart, lungs, and urine appeared normal. The blood showed no excess of white corpuscles.

Whipham: Reports of the Collective Investigation Committee of the British Medical Association; Acute Rheumatism. (*British Medical Journal*, February 25, 1888.)

The result of this inquiry has been that observations on six hundred and fifty-five cases were sent to the committee for comparison and analysis.

There were only eight cases in children under six years of age; seven of these were males, and six cases lived in a locality where the atmosphere was wet. The duration of the attack in the cases that recovered was under twelve days. There was a cardiac complication developed in seven cases. The murmur disappeared completely in four of the cardiac cases; in one it remained. Five of these eight cases recovered completely, one partially recovered, and two died.

In the remarks on previous illnesses the remarkable fact is shown that 24.12 per cent. of the cases were the subjects of *tonsillitis*, and that the numbers were the same in the two sexes, namely, 12.06 per cent. Besides this, sore throat (the exact nature of which is not specified) occurred in twenty

cases. Of the cases above mentioned, twelve males and fifteen females were the subjects of tonsillitis as a common ailment,—that is, the patients were liable to attacks of inflammation of the tonsils apart from any definite manifestations of rheumatism.

*Scarlet fever* occurred as an antecedent in eighty-eight cases out of the six hundred and fifty-five. It is thought that this number does not represent the actual fact, simply because many observers did not make special inquiry regarding particular fevers.

*Measles* occurred as an antecedent in thirty-four cases; but, as in scarlet fever, the reports are insufficient for any definite conclusions.

*Chorea* occurred as an antecedent in only thirteen cases.

There were many other antecedent diseases, but there is nothing special connected with them.

Eve, Frederick: On the Relation of Scrofulous Gland-Disease to other Forms of Tuberculosis. (*British Medical Journal*, April 14, 1888.)

This paper gives an account of a series of experiments made to aid in determining the precise relationship of scrofulous gland-disease and affections described as tuberculosis.

Small fragments of scrofulous glands prepared with sterilized instruments were used for inoculation. This precaution was taken so as to avoid the possibility of infection of the animals with true tuberculosis.

Glands from different patients were used for inoculation. This avoided the possibility of using virus of an exceptionally mild or severe type which might have been the case if a single gland had been used.

The result of the experiments in rabbits were that in the largest number visceral tuberculosis was induced. In one case only a cold abscess followed, and in only one case did the animal escape infection altogether. The cold abscess occurred in an animal inoculated beneath the skin. Inoculations in the anterior chamber of the eye produced, with one exception, tuberculosis of the lungs and liver; the inoculations in the abdomen invariably produced visceral tuberculosis. The author still further sought to determine by his experiments if the virulency of the tubercular virus was augmented as regards rabbits by passing glandular scrofula through guinea-pigs. His experiments show, with one exception, that the tubercular virus was decidedly intensified.

Upon examining sections of most of the animals experimented on, there was found no essential difference between

them and the same lesions produced by the inoculation of miliary tuberculosis. There were slight or marked alterations in accordance with the acuteness or duration of the disease. There were tubercle-bacilli found only in small numbers in the strumous glands, but they were found in abundance in those organs which were examined from the animals inoculated experimentally. In examining strumous disease and tubercular lesions no difference can be distinguished in its coarse anatomical character. Microscopically, however, the bacilli of Koch are not to be found, while in the periphery of caseous nodules masses of micrococci are found, the precise relation of which to bacillary tuberculosis has not been determined. Although there are these apparent microscopic differences, yet bacillary tuberculosis has been produced by inoculation of cultures of these micrococci. It is, therefore, possible to presume that these micrococci are simple contaminations or modifications of the bacilli of tuberculosis. The subject, however, requires further investigation.

Summarized, the author's experiments show that the virus of strumous gland-disease produced visceral tuberculosis in rabbits and guinea-pigs; but the disease in rabbits is not so rapidly fatal as that following inoculation with acute miliary tubercle. The difference is one only of degree, however, and it prevents the conclusion that struma differs from tubercular virus or that it is a specialized form of tubercular virus.

The explanation of the clinically innocent course of strumous gland-disease is to be found, probably, in the locality or soil in which the virus is implanted, and not in any difference in the virus of strumous gland-disease and that of tuberculosis.

**Schrakamp:** The Organic Changes which occur in Diphtheria. (*Arch. f. Kinderh.*, ix. 3.)

It will be admitted that the greater part of the enormous literature of diphtheria concerns either its clinical phenomena, its etiology, or the histology of the false membrane which constitutes so prominent a symptom of the disease. Quite recently the bacteriology of the disease has received careful consideration, but only a few writers have considered the organic changes which occur.

The author's paper is based upon autopsies made in fifty-four fatal cases of diphtheria in the Children's Hospital at Stuttgart during a period of eighteen months. Only those cases were included in the author's investigations in which there was a clear diagnosis of diphtheria unassociated with any other infectious disease.



The cavity of the mouth was involved in two cases, patches of white membrane being deposited upon the inner side of the lips and cheeks, not firmly attached, and in one of the cases the border of the tongue was ulcerated. The differential diagnosis between this rare form of diphtheritic deposit, and the phenomena which accompany other diseases of the mouth is not always easy. In only eleven cases was there an absence of false membrane upon the tonsils and pharynx, though in ten others it had nearly disappeared. In most of the cases the attachment of the membrane to the pharynx and tonsils was very firm. In eight there was ulceration and extensive loss of substance in the pharynx and tonsils, and in four others the tonsils were gangrenous. Nasal diphtheria occurred in eleven cases and was always complicated with diphtheritic processes in neighboring organs. The prognosis of this variety of the disease is always very bad. The œsophagus was involved in three, other parts being also extensively implicated. This variety of the disease is very rare, and in only one hundred of the cases was the diagnosis made before death. In four there was a more or less extensive deposit upon the mucous membrane of the stomach, and in one there were patches of exudate upon that of the intestine. In many of the cases degenerative processes were observed in the liver varying from parenchymatous cloudiness to extensive fatty degeneration. The spleen was frequently enlarged and hyperæmic.

In only three cases was the larynx free from false membrane and other evidences of inflammation; in twelve cases there was laryngitis without membrane, in thirty-nine with it. In the latter group the lower surface of the epiglottis and the upper third of the laryngeal mucous membrane were affected in three cases; in six the membranous formation began with the vocal chords; in the remaining thirty the entire interior of the larynx and its roof were involved, the membrane varying as to thickness and firmness of attachment. In only two cases was the trachea not involved; in seventeen there were evidences of inflammation with a muco-purulent secretion; in thirty-five the deposits of membrane were well marked, but in most of them it could be readily detached. Bronchopneumonia with its complications occurred thirty-six times, and it would seem that one might speak as properly of a diphtheria-pneumonia as of a measles-pneumonia.

Bronchitis was present in forty cases, and in almost all of them it involved the finest bronchioles. In some cases it was purulent, and in others it was attended with the formation of false membrane, but the latter was usually limited to the larger tubes. Emphysema was present in nineteen of the

cases of pneumonia, which was explainable upon mechanical principles, especially in those cases in which it had followed tracheotomy. In nine cases there was atelectasis, which, at times, seemed dependent upon the bronchitis, at others upon compression from a pleuritic exudate, and at others upon compression from enlarged glands at the root of the lungs. Pleuritis was present in nineteen cases, often as a complication of pneumonia. Metastatic lobular abscesses were found in two cases, in both of which the evidences of systemic poisoning from the diphtheria were very pronounced. Hemorrhages in the lung-tissue were found so frequently that they were looked upon as characteristic of diphtheritic bronchopneumonia. They were most frequently observed in the form of subpleural petechiæ, but sometimes were diffuse, surrounding the peribronchial nodules, or in the form of infarctions in the lung-tissue itself. The author regarded them as the combined consequence of congestion and infection. No cases of true lobar, croupous pneumonia were found, though the pseudolobar variety occurred in several instances. Pericarditis was a complication in fourteen cases, in twelve of which the effusion was serous, and in two purulent. In two cases there was emphysema of the pericardium, involving only the parietal layer. In fifteen cases there were slight hemorrhages under the pericardium, and in all these cases the indications of sepsis were more or less pronounced. In only two cases were there evidences of endocarditis, and these facts seem to argue that the hemorrhages in question are not due to obstruction in the small vessels by particles of endocardial vegetations, as Bouchut has stated, but are caused by septic products coming directly from the blood or from the primary focus of infection. The great frequency of endocarditis with diphtheria, which was emphasized by Bouchut, Labadie, Lagrave, and Bridger, did not appear in the author's investigations. The endocardium showed slight evidences of disorder in a number of cases, but in only two was there severe inflammation. The heart-muscle, on the other hand, was the seat of disease in many cases; in seventeen there was diffuse cloudiness in the entire mass of muscular tissue; staining showed nuclear cloudiness and indistinctiveness of striation of the individual fibres. In nine others there was true fatty degeneration. Occasionally the author found evidences of hemorrhage between the bundles of muscle-fibres, but he saw no cases of true myocarditis; the lesions were all of a degenerative rather than of an inflammatory character. True thrombosis was present in two cases, and they were the ones in which there was also endocarditis. The heart clot, which is so frequently found in individuals

who have died from diphtheria, is believed to be of post-mortem origin, and the grave disturbances in the circulation which are so frequently seen in the course of diphtheria are believed to be evidences of heart paresis, which is due to the extension of the general diphtheritic paralysis to the myocardium. Pathological changes in the kidneys were found in twenty-two cases, the organs not being very much enlarged, as a rule. The capsule was always removed with ease, and the color was dark red, pale, or yellowish. The difficulty of describing the pathological process which occurs in the kidneys with diphtheria is believed to be great; it is not a simple degeneration, for the changes which are found in the interstitial tissue may be considered as inflammatory, and hence there must be a nephritis at least in the narrower sense of the term. In forty-six cases there was lymphadenitis, the submaxillary, cervical, and bronchial glands being most frequently implicated, the mesenteric glands less frequently. In thirty-four of the cases the etiological relation was traceable to the diphtheritic process; in the remaining twelve there was a history of tuberculosis. The intensity of the inflammation was, in general, proportional to the virulence of the infection, and hemorrhages into the substance of the glands were not infrequent. The degree of inflammation in the cellular tissue, though varying greatly in different cases, was not associated with the extensive necrotic process which, according to Bouchut, is a characteristic in such conditions. Diphtheria of the skin occurred once, the process extending from the nose to the face. Diphtheria upon the labia of the female genitals was also seen in one case. Hemorrhages of the skin occurred four times, presenting the appearance of round, flat, red patches, which did not disappear after pressure. The patches were distributed over the neck, shoulders, and upper extremities, and less frequently over the chest, body, and lower extremities. The author thinks that the probable cause of these hemorrhages of the skin consists in the same degenerative process in the walls of the vessels which obtains in the most of the organs, and leads also to hemorrhages, as has been noted. It must be remembered that in cases in which there is general diphtheritic infection there is a decomposition of the blood with consequent deficient nutrition, and a loss of strength to the entire body. The vascular walls share in this loss of resisting power, and are, therefore, predisposed to lesions resulting in extravasation of blood. In no case which came under the author's observation was diphtheritic conjunctivitis observed; as to the causes of death in the cases which have been analyzed, changes in the respiratory tract have been in the large majority of them.



The larynx, trachea, or bronchi have been occluded either by false membrane or pus, by swelling of their mucous membrane, or by suffocative bronchitis, to such an extent that elimination of carbonic acid and absorption of oxygen have not been efficiently carried out. To these changes should be added general sepsis, which was also present in many of the cases.

A. F. C.

**Schrakamp: Differential Diagnosis of the Diseases of the Oral Cavity.** (*Rev. Mens. des Mal. de l'Enf.* [abstracted], February, 1888.)

Two cases are narrated illustrating the difficulties which are sometimes experienced in making a diagnosis.

The first was that of a boy fourteen years of age, who had been complaining of difficulty in deglutition for two days. The velum of the palate and the posterior wall of the pharynx were covered with transparent vesicles which varied in size from the head of a pin to a lentil. In the vicinity of the vesicles, irregularly distributed over the mucous membrane of the pharynx, there were small erosions covered with a yellowish gray exudate. The tonsils were slightly swollen, and there were erosions in the left nasal orifice. At the end of eight days the entire mucous membrane of the mouth was covered with the vesicles, the mucous membrane having a deep-red color, and other symptoms were offensive breath, increased flow of saliva, discharge of bloody mucus from the nasal fossæ, cough, temperature of  $38.7^{\circ}\text{C}$ ., pain in the larynx, and sibilant râles in both lungs. The naso-buccal cavity was washed repeatedly with a 1 to 3000 sublimate solution, but this did not prevent the formation of a yellowish false membrane and swelling of the submaxillary glands. Dulness at the apices of the lungs, intense dyspnoea, and bloody sputa also appeared. The urine contained blood and pus; under the continued use of sublimate washes for the mouth the morbid symptoms gradually disappeared.

The second case was that of a little girl five years of age, the mucous membrane of whose mouth was covered with small round patches of false membrane of a yellow color. There was no deposit upon the tonsils, but small purulent foci which corresponded with the follicles. The mucous membrane of the gums was red and swollen, but without ulcerations. The breath was offensive, the glands swollen, the conjunctivæ injected, and the evening temperature  $38.5^{\circ}\text{C}$ . Irrigation of the mouth with 1 to 3000 solutions of sublimate resulted in improvement after two days.

Concerning the diagnosis in these two cases diphtheria is to

be excluded on account of the formation of vesicles. Confluent aphthous stomatitis must also be excluded, for that disease is not accompanied by vesicular formations, nor with fetid breath; in that disease, also, the free borders of the mucous membrane of the gums are always involved, and, according to very good authority, it never occurs as a primary disease. In herpetic angina, which is suggested by the vesicles in these cases, the eruption shows no tendency to extend beyond the parts which are primarily attacked. Ulcero-membranous stomatitis suggests itself as a possible diagnosis, but it has never yet been demonstrated that there is such a thing as idiopathic ulcero-membranous stomatitis; besides, this disease is only observed in very feeble children, is limited to the mucous membrane of the gums, and is not accompanied with constitutional disturbance. With all these diseases excluded, the author could only conclude that his two cases represented a diphtheritic process which probably followed herpetic eruption of the pharynx.

A. F. C.

**Bollinger:** Recent Observations Concerning the Transmigration of Pathogenic Micro-Organisms from Mother to Fœtus. (*Jahrb. f. K.*, xxvii. 4.)

Waldeyer has shown that the spaces between the lobuli of the human placenta covered with endothelium contain foetal blood, and that the foetal tufts are therefore immediately bathed with maternal blood.

Recent experiments concerning the intra-uterine migration of pathogenic microbes from mother to fœtus, in connection with infectious diseases, have demonstrated the following:

1. Splenic fever. Both clinical and experimental investigations which have thus far been made show that, as a rule, the bacilli of splenic fever do not pass into the placentas of pregnant animals; from which it may be affirmed that they do not pass into the interior of the blood-vessels except in consequence of rupture of the vessels.

2. Symptomatic carbuncle (Rauschbrand). Aloing, Cornevin, and Thomas have shown experimentally that the bacilli of this disease can pass into the foetal blood.

3. Glanders. It has been shown experimentally and clinically that pregnant animals with this disease may bear either diseased or healthy offspring.

4. Infection from wolf-bite. The poison from wolf-bite resembles that of malignant pustule in the fact that of several fœtuses which may have been infected *in utero*, some will show evidences of the infection, and others will not, the same being also true concerning variola in human beings.

5. Typhoid fever. In sixty-three per cent of cases in which pregnant females are attacked with this disease abortion follows.

6. Recurrent fever. The intra-uterine migration of the *spirilla* from mother to foetus was proved by Spitz and Albrecht.

7. Cholera. Tizzoni and Cantani have presented what they regarded as positive facts concerning transmission, but Bollinger has not considered them absolutely certain, the more so since they also hold an isolated position in their views that the cholera bacilli were commonly found in the blood, and occasionally in the cerebro-spinal fluid.

8. Chicken cholera. Strauss and Chamberland have shown that the pathogenic bacteria of this disease can traverse the placenta in rabbits.

9. Septicæmia of rabbits. Gaffky does not believe that this disease can be transmitted through the foetal circulation. Kroner thinks it can, his opinion being based upon successful inoculations, although he could not demonstrate bacteria in the foetal blood.

10. Pyæmia. Simone has shown that the streptococcus of pyæmia passes from mother to foetus in the rabbit.

11. Tuberculosis. Negative evidence has been furnished by Koch, Weigert, and Jani, and positive by Charrière in human beings, and Johne in calves, but it is probably of very rare occurrence in animals.

12. Scarlet fever. Leale has demonstrated its intra-uterine transmission in two cases.

13. Erysipelas. Lebedeff has seen one positive case in which this disease was transmitted. That syphilis and variola can be transmitted *in utero* has long been recognized. The size and peculiar motion of micro-organisms have much to do with their infectiousness, also the duration of the disease, the condition of the placenta, and many accidental conditions.

A. F. C.

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### III.—SURGERY.

Laffan, Thomas: A Note on the Treatment of Spinal Abscess: (*British Medical Journal*, January 21, 1888.)

The author believes that the two rules, that spinal abscesses should not be opened hastily, inasmuch as that they may become absorbed, and that they should not be allowed to enlarge to any considerable extent, are often in private practice found to be more or less contradictory. If they are not opened early, time for very considerable enlargement is too often given. If, on the other hand, they are opened early, it endangers the



life of the patient. Occasionally these abscesses are absorbed. The author has had one such case in his experience. The abscess was in the left iliac region, about the size of the two hands clenched. There was disease of the tenth dorsal and two adjacent vertebræ. The spine of the tenth dorsal vertebra was very prominent; and those of the two adjacent ones were prominent, but somewhat less so. The patient was kept in a horizontal position in bed for four months; and for three months after that a Sayre's jacket was kept on. The case progressed favorably in every way; and not only was the Pott's spine cured, with, of course, deformity, but the abscess was eventually absorbed.

Although this case is a favorable one, the author thinks that it is exceptional. No one ought to sacrifice the overwhelming majority for the few chance cases. He agrees with those who propose to cut down directly on the bodies of carious vertebræ, and favors extending the operation to the dorsal region, instead of restricting it to the lumbar and last dorsal vertebra, as some writers have suggested. The anatomical difficulties which beset cutting down on the vertebræ here are grave; but they are neither insuperable nor comparable to those which have been successfully mastered in other regions of surgery. It is not to be denied that it is less formidable than interminable fistulæ, whose existence affords a too certain presage of the patient's destruction. The author's second point is to operate early as soon as the diagnosis of spinal caries has been made. He would anticipate the external appearance of the abscess by cutting down upon the vertebræ at once, and maintaining drainage by a direct opening with the diseased bodies. If disease should be really present it might be expected that there would be a considerable effusion about the bodies of the vertebræ; and this thickening might be counted on as a sufficient protection against the premature admission of air to the carious mass.

The case of Pott's disease without abscess, if there be any such, would present a difficulty; but the thickening already referred to might here, as in the last case, afford sufficient protection against atmospheric action. On the other hand, if the diagnosis should be incorrect, and no spinal caries should be found to exist, no possible mischief could accrue to the healthy vertebræ themselves.

Browne, Lennox: Cocaine in Tracheotomy (*British Medical Journal*, April 7, 1888.)

Since the introduction of cocaine the author has used it instead of chloroform when performing tracheotomy. He has

injected five minims of a ten-per-cent. solution of cocaine on each side of the immediate region at which the trachea is to be opened. Ten to twelve minutes have been allowed to elapse before commencing an operation, and in the majority of instances pain has not been felt even from the first incision through the skin.

Local anæsthesia has been maintained sufficiently long to allow of a careful and leisurely performance of the operation. The author's experience with cocaine in tracheotomy is represented by about forty cases. He has performed the operation on patients as old as seventy-five with good effect.

Beyond the advantage of cocaine as a local anæsthetic, this agent so applied has the effect of depriving the part of blood, and thereby diminishes hemorrhage during the operation; whereas with chloroform and ether the contrary effect is often produced. It also quiets the breathing and steadies the larynx in cases in which respiration is seriously hurried. In only one case has the author seen any toxic effect, and that was at once remedied when the trachea was opened and a full flow of air admitted into the lung.

Oliver: Notes on a Case of Traumatic Epilepsy successfully treated by Trephining. (*British Medical Journal*, February 4, 1888.)

The patient was a well-nourished lad, who had suffered four months with epileptic convulsions. There was a history of injury produced by falling on the side of his head. There had been fits daily. There was severe localized pain over the right temporal bone. It was noticed in the fits that the left arm and leg were more convulsed than the right, and that they were the first to be affected. In addition, these parts were often the seat of marked paresis, which lasted some time after the fit.

Medical treatment, with all the usual remedies, was tried, without the least benefit.

Upon consultation it was agreed that the history and symptoms warranted the application of the trephine over the painful spot. A piece of bone about the size of a shilling was removed without difficulty, and the dura found to be perfectly healthy. While watching it, it was noticed that the dura was becoming tense, and it was soon shot out beyond the level of the bone.

A crucial incision was then made in it, and there escaped several teaspoonfuls of serum. The arachnoid and pia upon examination seemed healthy. A drainage-tube was inserted, the cut edge of the dura sutured, and an antiseptic dressing applied.

The next day the dressing was soaked, and upon squeezing

it was found that more than two ounces of serum had escaped. The dressing was renewed, and there was never afterwards any escape of fluid. The patient made an excellent recovery. Dr. Oliver further adds that this method of treating epilepsy is only applicable to cases where there is a history of an injury to the head, followed by localized symptoms, or by convulsions more pronounced on one side than the other; or when an injury has been followed by a depressed fracture or separation of a portion of the inner table.

Parker, R. W.: Chronic Osteitis and Chronic Osteoperiostitis. (*British Medical Journal*, February 11, 1888.)

Specimens shown to the London Pathological Society:

Case I. was a child about nine years old. After a slight injury an extra-periosteal abscess, involving the whole thigh, developed. Amputation at last had to be resorted to. The femur, greatly thickened, was found to contain a small central necrosis. The abscess cavity was between the muscles and periosteum; the latter was firmly adherent to the bone.

Case II. was a boy about the same age. Following a fall, a chronic thickening of the femur took place. No cause could be discovered for this until after amputation, when a small central necrosis was found. In this case also the femur seemed to be entirely cancellous; but the periosteum seemed unaltered.

Case III. was an acute necrosis of the femur. The periosteum was widely separated from the apparently dead bone. There were no signs of repair in either structure. Mr. Parker contended that repair depended largely on vitality in the bone itself, and that the part the periosteum played in the repair depended on its being in contact with living bone.

Owen, Edmund: Case of Anomalous Sacral Appendage. (*British Medical Journal*, February 11, 1888.)

An infant under the care of Mr. Edmund Owen was shown to the Pathological Society of London. On the lower part of the back was a rounded swelling, measuring three and three-fourths by three and a half inches, and projecting about seven-eighths of an inch. The lower limit was just above the fold of the nates. The tumor, which was situated a little to the left of the middle line, presented in the exact centre an umbilication. Half way between the dimple and lower border, and slightly to the left of the middle line, was a soft appendage about two inches long and having somewhat the appearance of a fat "little finger." The base of the appendage was constricted, and on its left side was a second small excrescence a quarter of an inch long. Both hands were badly developed,



being smaller than natural; all other parts of the body appeared to be normal.

The child was born at full term, and there was no history of deformity in the family.

Mr. Owen suggested that the rounded swelling was the result of spina-bifida, while the appendage, and perhaps the tumor also, was the result of an imperfect attempt to produce a double monster. The sacrum was by no means an infrequent site for the attachment of a fairly-developed or rudimentary foetus. Mr. Marrant Baker and Mr. J. B. Sutton both thought that the case was an example of parasitic foetus. Mr. Sutton observed that if during development the medullary fold remained cleft, two complete foetuses were formed from a single ovum; this was probably the explanation of twins of the same sex in one amniotic sac. From this there was every degree of combination from Siamese twins to such a case of very rudimentary foetus as that shown by Mr. Owen.

**Fabre: Unusual Form of Obstruction by Means of Cherry-Stones.** (*Arch. f. K.*, ix. 4 and 5.)

Eight cases of obstruction and subsequent inflammation are reported which were due to accumulations of cherry-stones in the rectum. One case was that of a girl seven and a half years of age, from whom two hundred and sixty-seven stones were removed. Another case was that of a man sixty-six years of age, who was found dead in bed. The stomach was empty, the liver and spleen normal, the duodenum and small intestine distended with gas, faecal matter in the transverse and descending colon and sigmoid flexure. The entire rectum was filled with a mass of cherry-stones and scybalæ weighing four hundred grammes. The rectum had bursted at the ampulla. The conclusions with regard to this subject are:

1. Accumulations of cherry-stones occur oftener in the rectum than in other parts of the intestine.

2. They present characteristic symptoms not so marked in constipation from other causes; these are a permanent sense of pressure and tenesmus, without result. The anus is inflamed and partly open, and from it constantly exudes a yellowish fetid fluid.

3. Repeated purgations increase the irritation by increasing the discharge of the fluids in the intestine without effecting the removal of the stones. Sitz-baths relieve for the moment.

4. The rectum should be washed out with a large quantity of water, an anal speculum being used to facilitate the injection. The removal of the mass by the fingers is very painful, and is not recommended.

5. Death may occur from perforation of the intestine, but cases usually result favorably.

A. F. C.

Celli: Congenital Occipital Meningocele; its Radical Operation followed by Cure. (*Rev. Mens. des Mal. de l'Enf.*, June, 1888.)

The patient was a boy three years of age, with healthy parents, who had been nourished at the breast, was in good general condition, with teeth and bones normal, was lively and intelligent. The tumor had existed from birth, was soft, tender upon pressure, swelled with the acts of respiration and crying, and was diagnosticated as meningocele. It was in the occipital region, as large as a good-sized pear, the skin over it being neither red nor covered with hair, the pedicle was fibrous, immovable, and located contiguously to the posterior occipital crest. About thirty grammes of clear, yellowish fluid were removed by aspiration, the pedicle remaining hard, painful, and immovable. Its intracranial connection was believed to be very slight; the child was chloroformed, and an attempt was made to enucleate it. The tissues were divided, layer by layer, until the dura mater was reached, when numerous adhesions were found and were also divided. It was then found necessary to ligate the pedicle, which was done with No. 3 catgut, after which the tumor was cut away. In the stump was a small canal within which could be seen nervous filaments. The opening of the stump was closed with fine catgut; the first ligature then being removed, bleeding vessels were tied, and the wound was closed, painted with collodion, and dressed with sublimate bandages. Subsequently there was some vomiting, with redness of the face, headache, and hyperæsthesia. An ice-bag was applied to the wound, and there was little rise of temperature. The wound healed by granulation in about fifteen days, and the patient was entirely cured. A. F. C.

Dujardin: Phlegmon of the Orbit in a New-born Infant. (*Rev. Gén. d'Ophthal.*, April 30, 1888.)

An infant, nineteen days old, was attacked with a deep phlegmon of the orbit. The abscess was opened by puncture with a bistoury, the pus being first evacuated by this opening, but subsequently flowing from the mouth and nostril, and resulting in a cure. When the child was born its mother observed that he had upon the lower lid a small swelling, which disappeared, leaving a minute scar. The question occurred to the author whether this lesion of the skin may not have been the avenue through which microbes from the maternal secretions passed into the child's tissues, although the mother was

apparently exempt from gonorrhœal discharge. As to the discharge of pus through the nose and mouth, the author had seen an analogous case, in which needles were introduced into an intraorbital tumor in a little girl for the purpose of electrolysis, a phlegmon resulting which discharged in the manner which has been mentioned.

A. F. C.

Cadet de Gassicourt: The Treatment of Purulent Pleurisy in Children. (*Jour. de Méd.*, April 22, 1888.)

There are two methods of treating and curing purulent pleurisy,—simple punctures, and the cutting operation for empyema, the latter not including an extensive operation like that of Estlander, the indications for which are of late appearance. The punctures are not infrequently preliminary to the cutting operation, the latter being required if there has been no cure as the result of a number of punctures. The most favorable conditions for success from simple punctures are that the patient should be not more than six or seven years of age, that the thoracic walls should be very supple, that the lungs should be sound and should expand readily, that the false membranes should not be very strong, and that the pleura should have considerable vitality and permit the active resorption of its fluid contents. If punctures are to be made, they should be made systematically and not at random, at regular intervals of four or five days, that one may judge as to the quantity of pus produced in a given number of days. Should the temperature rise, the explanation would be a new formation of pus, or a concomitant pulmonary lesion. The physical signs should be carefully studied for each of the foregoing conditions, though these signs are frequently deceptive, with the exception of those which indicate a return of sonorousness and the normal respiratory *bruit*. The author is thoroughly opposed to the indefinite repetition of punctures, and his rule concerning this method is that the quantity of pus withdrawn with each successive puncture must diminish. If after two punctures the quantity increases, no further time should be lost before doing the cutting operation. This operation has nothing peculiar about it in the author's hands, is done under antiseptic precautions, and has usually been followed by cure in twenty to thirty days. There are some cases, however, in which the punctures may be repeated quite a number of times; for instance, cases of pneumo-thorax with the pulmonary fistula occupying the seat of election for an incision. Such a case is narrated, in which, after a number of punctures, the fistula healed, and in twenty-four days from the time of the first puncture no more pus could be obtained.

A. F. C.



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THERAPEUTICS OF INFANCY AND CHILDHOOD.

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(Continued from September Number.)

IV.—CONSTITUTIONAL DISORDERS.

4. *Tuberculosis.*

IN the young, as in the old, the tuberculous poison is spread either by mechanical transmission through cough, deglutition, and aspiration, or in the contiguity of tissues after having been developed in a given locality, or through lymph-ducts and blood-vessels. The latter, after having absorbed from the primarily invaded part, are liable to distribute the poison in a distant part or all over the system. Most frequently the primary seats of the affection in the young are the bones, joints, and lymph-bodies. Among the latter, those of the mesentery are by no means so frequently affected as they are still reputed to be; those of the neck and mediastinum are more subject to primary infection.

The most common forms in which tuberculosis makes its appearance in the young are acute miliary tuberculosis, acute or subacute cheesy (scrofulous) pneumonia, and genuine chronic tubercular phthisis with cavities. The latter form is not very

frequent, but we see it at every age. While I have met with but very few cases before the end of the first year, they are not quite rare after the sixth or eighth. It is often accompanied or preceded by pleurisy; indeed, it appears probable that this pleurisy, with its frequent relapses, is the primary seat of tuberculosis in many.

The most common form of phthisis in the young is that which is developed out of scrofulous pneumonia. It is a frequent result of the bronchitis and catarrhal pneumonia attending measles and whooping-cough, and quite generally accompanied with considerable changes in the glands. It is often seen in the lower lobes; indeed, the upper lobes are often found to be the seat of induration, resulting from interstitial inflammations, which retract the corresponding part of the chest, exhibit diminished respiratory murmur and dulness on percussion, and may last a long lifetime without endangering life or health to any considerable extent.

What I said about the mode of development of these frequent forms points at once to preventive treatment as the principal indication. If bronchitis, catarrhal pneumonia, measles, whooping-cough, and glandular diseases are frequent causes of tuberculosis, those primary affections must be effectually treated. There is no bronchitis which cannot be made milder, many a case of catarrhal pneumonia can be shortened or rendered less dangerous, and most, perhaps all, cases of whooping-cough modified and shortened. In a former paper I insisted upon the necessity of treating all the self-limited diseases. The sin of omission is as grave as that of commission. And in my remarks on scrofula, to which I here refer, I pointed out the facility of eradicating the coming evil by removing unabsorbable lymphatic glands. Unfortunately, the success of treatment in cases of acute miliary tuberculosis is so small, and of chronic tuberculosis so unsatisfactory, that the indications for preventive treatment are the more urgent. The facts of universal tuberculosis arising from a local source cannot be denied, having been proven by thousands of experimental and clinical observations. Now and then a case is quite demonstrable. A few years ago I had a little girl in my division in Bellevue Hospital who suffered from the most exquisite and

extensive tuberculosis of the skin I have ever seen. She finally died with empyema and general tuberculosis. Coming from a fairly healthy family, she developed a glandular swelling in her right axilla, which was neglected, and permitted to break spontaneously and result in fistulæ. From that place the lymphatics transported the infection, and produced extensive ulcerations over the chest; metastases took place to other parts of the body, and the child died of universal tuberculosis. It is an indifferent matter to investigate whether the original affection was tubercular already, or whether the tubercular character was developed afterwards. This much is certain, that the child need not have died if the gland which was primarily affected had been extirpated.

It is unnecessary to add that tuberculosis of the bones and joints, so frequent in infancy and childhood, require prompt attention, and in many cases operative procedures.

Among the causes of tuberculous consumption which makes its appearance in otherwise healthy persons, both young and old, the following also are given prominence by all observers of note: Insufficient supply or change of air, absence of exercise, overwork without rest or vacation, monotonous food, and persistent mental emotions. Most of these sources of disease act as well on the young as old, and may lead to infiltration, before there was any cough as yet, but anæmia, muscular debility, and loss of appetite only. Therefore tubercular infiltrations are frequently found among the inmates of prisons, particularly those who have been isolated a long time, workmen in factories, soldiers in barracks, students in seminaries, children in orphan asylums and large boarding-schools, those attending crowded public schools and overworked with their private studies, besides being crippled by unwise discipline, which requires absolute immobility, and loss of time or opportunity for exercising. It is not very probable that the occasional promenades of the young by couples—though not handcuffed, though on a Madison Avenue sidewalk, though attended by the goodwill, moral character, and Argus eyes of two elderly ladies—are equivalents for the free and unhampered play and development of the growing organs. If it be a fact that there is so much less tubercular disease among hunters, farmers,



gardeners, and sailors than among factory men and women of all trades, school-masters, tailors, it is certain that rowing, skating, gymnastics, and tennis, even the so-called calisthenics, if practised in the open air, would expand many a child's chest, ærate his blood, keep his organs vigorous, and eliminate invading poisons.

There are many other causes or influences creating or increasing the possibility of tubercular invasion. A considerable predisposition is created by the vulnerability and fragility and œdematous infiltration of scrofula; by the catarrh produced by sedentary life and foul inhalations. Koch has proved that active bacilli pass the stomach unmolested and invade the intestine, thus rendering even a primary intestinal tuberculosis possible.

Hereditary predisposition to tuberculosis is quite frequent, and is transmitted even by such parents as appear to be in fair health. Constitutional parental disorders resulting from the influence of scrofula, rhachitis, and even syphilis, may become manifest in the children in the shape of tuberculosis. In such children every catarrh must be carefully watched. The premature ossification of the costal cartilages, most frequently found about the superior part of the chest, and the consecutive shortening of the sterno-vertebral diameter give rise to contraction of the thorax and insufficient expansibility of the (upper lobes of the) lungs. In such cases the æration of the blood suffers at a very early date, catarrhal and inflammatory thoracic diseases are liable to become dangerous, and gymnastic exercises are required in early childhood.

Direct transmission from the parents to the children is probably not frequent, but it is possible, and therefore the child must not share the room and bed of the consumptive. Kissing must be omitted under these circumstances; it may often be the cause of contagion, though not so frequently as, for example, diphtheria is transmitted in that manner.

A consumptive mother must not nurse her infant. She is a greater danger than one afflicted with syphilis. Her milk is a positive injury, as is the milk of tubercular cows, though the udder may not be diseased. Two cows out of a hundred are tubercular. Thus the least that can be done is to boil the

milk intended for the nourishment of the infant. By thus obeying the rule which I have enjoined these twenty-five or thirty years, the milk can be made more innocuous than is possible for the butter or cheese obtained from such cows. These rules ought to be strictly obeyed, though there be exceptions to the universal experience. An instance of such exceptions is mentioned by Biedert, than whom there is no more reliable observer. He reports the cases of children who were fed a long time on the milk of tubercular cows without being attacked themselves.

Among the causes of consumption monotony of food has been enumerated by many. It is evident that it cannot account for much in the cases of infants or children, whose habits are plainer and digestive functions more adapted to simpler and more uniform articles of diet. Most of these, while in health, are satisfied with milk, cereals, and but little meat. Sweet cream may be added to the milk, but more than a few ounces are not digested through the course of a day. Cod-liver oil acts mostly through its fat. During the afebrile condition and chronic emaciation, over-alimentation, introduced by Debove, may be tried to advantage, while the insufficiency of gastric digestion may be stimulated by the administration of artificial gastric juice (pepsin with muriatic acid) and mild stomachics (gentian, nux, diluted alcoholic beverages): Where exercise cannot be procured to a sufficient extent, or is contra-indicated by the necessity of enforcing temporary, but absolute, rest, massage, according to S. Weir Mitchell's plan, will take its place. During fever, over-alimentation has to be stopped; it deranges digestion and slowly increases the fever. Alcoholic stimulants will at that time often take its place to advantage. While they do not act well in the general erethistic condition of certain over-irritable natures, with over-sensitive hearts, and in hæmoptysis, they are good stimuli for the general system, diminish perspiration, and act favorably in diarrhoea.

In the treatment of tuberculosis no single factor is beneficial by itself. The quality of the air alone will not cure the sick any more than a certain mixture of salts and water in a mineral spring, or some known chemical relation of albuminoids and carbon-hydrates in an article of food. Insufficient clothing and

bedding, unheated rooms, draughty halls, indigestible food, strong coffees and teas, hot cakes and cold drinks, late hours, lively hops, brass instruments and pianos disturbing midnight rest, kill as many, in proportion, in Colorado, Florida, Southern France, and Italy, as in New York. Unfortunately, we know too well that our patients believe they have done enough for their physician (or themselves?) when they have followed his advice to change climate. In this respect, too, it is true that those who speed over the sea are changing their sky, but not their spirit.\* It must never be forgotten that the change of climate is mostly a negative remedy, and cannot be expected to offer more than the possibility of favorable external circumstances.

Moist air is a better conductor of warmth than dry air. Thus loss of temperature is more rapid in moist air than in dry air. Dry air, therefore, may be very much cooler, and is still better tolerated in spite of its lower temperature, and affords more protection. Hæmoptysis appears to be a frequent occurrence at the times and seasons of increasing atmospheric moisture (spring). According to Rohden's researches a rapid increase of the percentage of water in the blood is frequently sufficient to produce a hemorrhage. Thus the drinking of large quantities of water ought to be avoided, and no residence be selected for a patient subject to hæmoptysis where the atmosphere is very moist. Dry altitudes such as those of New Mexico have given me good results in pulmonary hemorrhage. At all events, no place must be selected where the percentages of moisture in the air are liable to change rapidly. The uniformity of an insular climate, while benefiting the average case of phthisis, is, therefore, not so dangerous to those who have bled from their lungs. Still, dry air and a higher scale of the barometer are preferable.

The diversity of opinions in reference to the climato-therapeutics of phthisis resulted from the circumstance that the indications were not distinctly understood. Neither cold nor warm, neither dry nor moist, air by itself is a remedy. Warm air does not cure, but it enables the patient to remain out of

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\* "Cælum non animam mutant qui trans mare currunt."



doors. The temperature must be uniform, sudden currents of air avoided, and the atmosphere free of microphytes. At an altitude of sixteen hundred feet their number is greatly reduced (Miquel), there are but few at a height of two thousand six hundred feet (Freudenreich), very few at six thousand, absolutely none at twelve thousand feet, provided the parts are not, or but little, inhabited. Over-population of elevated villages and cities diminishes or destroys their immunity. In the factories of the Jura Mountains, with a great working population, at an altitude of three thousand five hundred feet, tuberculosis is frequent.

Protection against sudden gushes of wind and rapid changes of temperatures is an absolute necessity. The elevated valleys or rather recesses of mountains (Colorado) deserve their reputation in pulmonary diseases. Davos is dusty, windy, and exposed to frequent changes of temperature during the summer, and must not be advised for that season. Woods are warmer in winter, cooler in the summer; so is the ocean. Both, therefore, deserve well their reputation in the chronic ailments of the respiratory organs.

Not the thinness of the atmosphere, but its purity, is the requisite, and a high percentage of ozone. The latter is developed under the influence of intense light, the presence of luxuriant vegetable growth, particularly of evergreen trees (*Terebinthinaceæ*), and the evaporation of large sheets of water. Thus ozone is found on moderate or high altitudes, in needle-wood forests, and near or on the ocean.

In the general hygienic treatment of tuberculosis the skin requires particular attention. Sudden changes of temperature, which strike the surface suddenly and work their effects on internal organs by reflex,—“colds,”—in spite of the modern superciliousness of some who deny any pathological change unless the exclusive work of bacteria, will always hold their places in nosology. The skin must be both protected and hardened. Wool, or wool and cotton, must be worn near the skin, the feet particularly kept warm, no wet or moist feet permitted, undergarments changed according to season and the alternating temperatures of days or weeks, and every night and morning. It is of the greatest importance to impress

upon the minds of the very poorest that they must not wear during the day what they have slept in. Still, while protection is to be procured anxiously, vigor and strength is to be obtained by accustoming the surface to cold water. The daily morning wash may be warm in the beginning, and become gradually cooler; alcohol added to the water in the beginning (alcohol alone is unpleasant by its withdrawing water from the tissues), or salt always. The temperature of the water being gradually diminished, the same treatment can be continued during the winter, with a pleasant sensation of vigor. The subsequent friction with coarse bathing towels sends a glow over the surface and through the whole body; it is desirable that, as much as possible, the patient perform it himself. The easiest way to start the habit is by washing, a short sponge- or shower-bath will take its place soon, and a cold plunge will be borne even by the weak afterwards.

It has become fashionable with many to feign a contempt for internal medicines in the treatment of tuberculosis, pulmonary and otherwise. I am glad I cannot share their opinions. Thus, for instance, I look upon arsenic as a powerful remedy in phthisis. It was eulogized as early as 1867 by Isnard, in a monograph, for its effect in both malaria and consumption, in both of which he explained its usefulness through its operation upon the nervous system. He claimed that suppuration, debility, emaciation, vomiting, diarrhoea, and constipation would improve or disappear under its administration. The doses of arsenious acid used by him in the cases of adults amounted to from one to five centigrammes (one-sixth to five-sixths of a grain) daily.

Arsenic is certainly a powerful remedy. It is known to act as a poison and a strong caustic. It prevents putrefaction, though as an antiseptic it ranks even below salicylic acid. It acts favorably in malaria, chronic skin-diseases, maladies of the nervous system, and has considerable, and sometimes unexpected, effects in the treatment of lympho-sarcoma and sarcoma. It is also said to improve sexual desire and power, and in animals physical courage. Thus there is a variety of effects the intrinsic nature of which may be found, uniformly, in the action of the drug on the function and structure of the

cell, which, though varying in different organs, has the same nutritive processes. Arsenic has a stimulating effect on cell-growth. In small and frequent doses it stimulates the development of connective tissue in the stomach, in the bone and periosteum, everywhere; in large doses, by over-irritation, it leads to granular degeneration. Like phosphorus, arsenic builds in small doses, destroys in large ones. By fortifying the cellular and all tissues, both fibres and cells, it enables them to resist the attack of invasion, both chemical and parasitic, or to encyst or eliminate such enemies as have penetrated them already. Thus it finds its principal indication in the peculiar fragility of the blood-vessel walls resulting in pulmonary hemorrhage.

The doses must be small. A child a few years old may take two drops of Fowler's solution daily, or a fiftieth or fortieth of a grain of arsenious acid for weeks or months in succession. This amount may be divided in three doses, administered after meals, the solution largely diluted. There is no objection to combining it, according to necessity, with stimulants, roborants, or narcotics, and to giving it for an indefinite period, unless the well-known symptoms of an overdose—gastric and intestinal irritation and local œdema—make their appearance. But they seldom will, particularly when small doses of opiates are judiciously added to them. In almost every case, perhaps in every one, it is desirable to administer it in conjunction with digitalis.

In the vertebrate animal, digitalis increases the energy of the heart-muscle and its contraction; thereby it increases arterial pressure and diminishes the frequency of the pulse. By increasing arterial pressure it favors the secretion of the kidneys, improves the pulmonary circulation, empties the veins, thereby accelerates the flow of lymph and the tissue fluids, and exerts a powerful influence on the metamorphosis of organic material,—that is, general nutrition. Besides, what it does for the general circulation and nutrition it also accomplishes for the heart-muscle itself. The blood-vessels and lymph circulation of the latter are benefited equally with the rest. Thus digitalis, while being called a cardiac stimulant, contributes largely to the permanent nutrition and development of the



organ. This effect is not only of vital importance for the economy of the system on general principles, but an urgent necessity in view of the fact that there appears to be a relative undersize of the heart, either congenital or acquired, in cases of phthisis; and there is certainly such a predominance of the size of the pulmonary artery in the young, particularly over the aorta, that the normal suceulence of the lung becomes pathological quite readily when the insufficiency of the heart-muscle tends to increase low arterial pressure within the distributions of the pulmonary. The selection of the preparation to be administered is not always an indifferent matter. The infusion and the tincture are not always well tolerated by the stomach; digitalis, not being a soluble alkaloid but a glucoside, is not always reliable in its effects, and not of equal consistency and strength; a good fluid extract, or the extract, are borne well and may be taken a long time. A child a few years old may take about two minims of the former daily, more or less, for weeks and months, or its equivalent in the shape of the extract (two-thirds of a grain daily); the latter can easily be given in pills, to be taken in bread, or jelly, and combined with any medicines indicated for special purposes, such as narcotics, or nux, or arsenic, or iron; the latter to be excluded in all feverish cases, or in all cases as long as there is fever. As long as there is no urgent necessity for a speedy effect, digitalis will suffice by itself; as a rule, it does not operate immediately in those small doses. The addition of strophanthus, or sparteine, or caffeine, all of which are speedily absorbed and eliminated, and exhibit their effect rapidly and without the danger or inconvenience of cumulation, will prove advantageous in many cases.

Other medicines have been used in great numbers. Specifics have been recommended, and symptomatic treatment been resorted to. The success of the latter depends on the judgment of the individual practitioner. No text-book or essay can teach more than general principles and their adaptation to the average case, and the measures to be taken in a number of exceptional occurrences. The indications for the use of narcotics, stimulants, expectorants, and febrifuges will change according to the cases and their various phases and changes.

In every case the necessity may arise for antipyrin, antifebrin, phenacetin, salicylate of sodium, or quinia. It may be necessary to decide the question whether the administration is to be made through the mouth, rectum, or subcutaneous tissue, or how their effects are to be corrected or combined. I have often found that a hectic fever would not be influenced by quinia, or by antipyrin, or salicylate of sodium. But the combination of the first with one of the latter would frequently have a happy effect.

The change in our pathological views, or rather the addition of a new factor in our etiological knowledge, has directed our attention to the antiseptics of the respiratory organs. To destroy bacteria is not necessary in order to make them relatively harmless. It is impossible to kill the bacillus without killing the normal cell, but very mild antiseptics suffice to stop the efficiency and proliferation of the parasite. Thus we can hope that the future will teach us to reach the destructive process in the lungs. It is quite possible that the inhalation of hydrofluoric acid will not prove more beneficial than the rectal injection of sulphide of hydrogen, but the internal use of creasote (one to three minims to a child daily) and terebene (two to four minims every two or three hours) and the inhalations of turpentine, eucalyptol, menthol, and many others, appear to rouse our hopes for a future effective treatment. Much more than hopes we cannot have at this moment. But it is useless to despair, both passively and actively. For the present, however, it is a desperate activity which tempts an enterprising hero of the reckless knife to cut away a part of a lung which is the seat of a general and disseminated process.

Among the localizations of tuberculosis in children that of the larynx is not frequent, but it is met with. According to Heinze, laryngeal tuberculosis is not produced by contact, but through the medium of the blood. But the expectorated masses are undoubtedly a frequent cause of the local infection, and as a rule the larynx is invaded rather than the lungs. Beside nodulated inflammatory swellings in the mucous membrane, submucous tissue and glands, sometimes even between the muscles, there are small granulations and ulcerations on the cords, with universal catarrh, œdema, and phlegmonous

destruction. The symptoms are those of catarrh and ulceration, and depend on the locality and severity of the lesion. In some cases the diagnosis of pulmonary tuberculosis could not be made in the beginning, and that of the local affection was based on the duration of the ailment, the persistence of the fever, and steady emaciation. At first the laryngoscopic examination revealed catarrh only, and but later ulceration and infiltration. The local treatment is that of the catarrh,—inhalation of warm vapors, steam, turpentine, carbolic acid, muriate of ammonia; poultices round the neck; opiates at bedtime. The spray with lactic acid and the application of iodoform have served me less well than a daily spray of a solution of one part of nitrate of silver in two or five hundred parts of distilled water. Stronger solutions are rather harmful. The pain produced by ulcerations located on the epiglottis and arythenoid cartilages is somewhat relieved by the application (brush or spray) of bromide of potassium, morphia, or cocaine, or an appropriate mixture of two or three of them.

The air around patients suffering from laryngeal phthisis may be moist; but it is a mistake to believe that it must be warm. Cold air is warmed before it enters the larynx and lungs, provided it enters the respiratory tract through the nares. Only when it is admitted through the mouth it remains somewhat cool when reaching the larynx. Thus the nares must be kept as normal as possible, and competent, no matter with what difficulties: nor will open windows interfere with the comfort of the patient, provided that draught is avoided. That can be easily accomplished by screens or otherwise.

Ulcerations of the tongue and pharynx are painful sometimes to such an extent as to require frequent attention. A well-directed spray, as mentioned before, of one part of nitrate of silver in two hundred of distilled water (glass to be of neutral, blue, or black color), administered once a day, will be found serviceable in average cases. Some are so bad as to interfere seriously with deglutition. I have been obliged to use a cocaine spray before every meal.

Tubercular ulcerations of the intestines may descend to the



rectum; in that case the local symptoms, and mainly the tenesmus, may be alleviated by warm injections containing gum acacia or bismuth, with or without opiates. Food and drink must be warm; bismuth may be given in doses of from two to ten grains every hour or two, so as to form a protection to the sore intestine. Tannin I have not seen to do much good. Naphthalin sweeps the whole length of the tract and acts favorably as a disinfectant. I have seen almost immediate improvement after its use. From four to ten grains may be given daily. Now and then the stomach rebels against it; in that case, resorcin, in doses of from one-fourth to one grain, in a powder or in solution, may be given for the purpose of disinfection from three to eight times. Though it be very soluble, it certainly is effective to a certain extent. All of them may be combined with bismuth, or lead, or opium. Hydrargyrum bichloride cannot be relied upon for any effect in the lowest parts of the intestinal tract because of its great solubility, the necessity of great dilution, and its ready absorbability.

Fistula in ano is a rare occurrence in children under all circumstances. I remember but two cases in tuberculous girls of about ten years. No matter whether they be accidental complications, or the tubercular poison (bacilli) be conveyed to the parts through the circulation, or the fistula be the result of the presence, in the fæces, of bacilli, and their action on defective epithelium, practice has changed entirely during the last decade. The axiom that fistula in a consumptive patient must not be interfered with has given way to a more rational theory and sounder practice. The sooner they are operated upon and treated the better.

Pulmonary hemorrhages are not of so frequent occurrence as in adults, but I have observed them in children of from three to eight years. A single instance of hæmoptysis in a girl of eleven years proved fatal by suffocation. The application of a lump of ice or an ice-bladder over the locality of the hemorrhage acts favorably, either through the direct influence of the cold temperature or the reflex contraction of the bleeding vessels. The subcutaneous injections of the fluid extract of ergot, or ergotin in glycerin and water, are very apt to

give rise to induration or abscesses; thus it will be left to the practitioner to decide in an individual case whether that risk may be taken. Sclerotinic acid has been recommended for the same purpose. A syringe-ful has been injected hourly of a solution of one part in five of water. It is claimed that no local injury is done by it, but it is painful, and has been corrected by the addition of morphia. The latter may be given internally also for the purpose of relieving the patient's symptoms, both objective and subjective. If it cannot be swallowed well, the proper quantity of Magendie's solution, not diluted in water, is readily absorbed through the mucous membrane of the mouth or throat. The internal administration of ergot may be supported by that of mineral acids and digitalis. Of the latter, a single dose of from two to five grains, or its equivalent, acts well. The dilute sulphuric acid is both efficient and palatable; ten or fifteen drops in a tumbler of (sweetened) water will be readily taken to advantage. Acetate of lead, in doses of one-sixth to one-half of a grain, every hour or two, according to age and the severity of the case, is preferable to tannin; it can be given with morphia or digitalis, or both. The patient requires absolute rest and encouragement, and must be induced to make long, forcible inhalations, and told to suppress the cough as much as possible. To relieve it opiates may be required. For the purpose of stopping hemorrhages the inhalation of the sesquichloride of iron (1 to 100) has been recommended. As it was not expected to enter the bronchial tubes, its effect was presumed to be by reflex action. I have tried it a number of times, like many others, but cannot sufficiently recommend it.

Night-sweats are not uncommon in the tubercular phthisis of children of from five to twelve years of age. They are favorably influenced by the same remedies which are apt to relieve the adult; such are the sponging with vinegar and water, or alum, vinegar, and water. A powder of salicylic acid three parts, oxide of zinc ten, and amylum ninety, or salicylic acid three, amylum ten to twenty, and talcum eighty or ninety, dusted over the suffering surface, is quite beneficial and soothing. For internal administration the dilute sulphuric acid, ten or fifteen drops in a tumblerful of water, is

found enjoyable by a great many. A single dose of atropiæ sulphas (one-three-hundredth to one-hundredth of a grain) at bedtime, or agaricin (one-fiftieth to one-twentieth of a grain), or duboisin (one-hundredth to one-fiftieth of a grain) will succeed in bringing relief. Where there is an indication for opium, it may be combined with any of them. When the digestion is good, a fair dose of quinine (three to six grains), with or without extr. ergot. (the same dose), or extr. ergot. fluid. (one scruple to half a drachm), deserves a trial when for some reason or other the above remedies are discarded.

(To be continued.)

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## DISEASES OF THE MOUTH (NON-SURGICAL).

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(Continued from September Number.)

### I.—STOMATITIS CATARRHALIS.

**PATHOLOGICAL** anatomy and symptomatology will be considered together, as all observations can be made during life. Catarrhal stomatitis has no favorite starting-place, nor can we say that it limits itself to any especial locality in the mouth, except in the rarer localized form, in which the appearances of the mouth do not differ from those of the generalized form, if we take extensity of affection into consideration. The tongue, the soft and hard palate, the cheeks, the buccal surface of the lips, and the mucous membrane covering the jaws are all affected. If we look into the mouth of a child with simple stomatitis we see various grades of change: first, the erythematous; second, the true catarrhal. Further subdivision is unnecessary, as in all other forms, especially in the one by many authors called follicular, all the changes are the logical outcome of an inflammatory process upon a peculiarly constructed



mucous membrane ; just as *acne vulgaris* is found upon the skin. In the erythematous form the whole mucous membrane of the mouth takes upon itself a more or less deep red color. The process can be looked upon as the result of irritation which is not sufficiently intense to be followed by inflammatory reaction. There exists, then, hyperæmia only, which, as a rule, is of such a transitory nature that deeper changes do not follow. The hyperæmia may be so well marked—and this is often the case in newly-born infants—that rhexis occurs, followed by slight hemorrhages, or red corpuscles may be forced out into the lymphatic spaces of the subepithelial connective tissue, whose coloring-matter changed to hæmatoidin will give a distinct yellow tint to the mucous membrane. This is especially the case over the hard and soft palate, a process analogous to the one in the skin in *icterus neonatorum*. The condition of erythema of the mouth may be looked upon as normal in the newly born, and requires no attention, as it disappears after the first week of life, rarely lasting longer. This process being a very superficial one there are no changes in the glands, either of the mucous membrane or of the lymphatics. Therefore the functions of the mucous membrane are not interfered with. As a rule, there is no hypersecretion, but, on the contrary, there exists more or less dryness of the mouth, which must find its explanation in the fact that the temporary nutrition of the epithelial coating is interfered with. There is one form of erythema to which especial attention must be called. It is found in pertussis and, as far as the tongue is concerned, in measles.

The appearance of the mouth in the acute exanthemata will be discussed in another place, but the following description also holds good for the tongue in measles. If we look at the mouth of a patient suffering with pertussis, perhaps the most striking thing to be observed is the blue color of the tongue and the rest of the oral cavity. The mechanism is simply the production of venous hyperæmia by the repeated attacks of coughing, which prevent the ready return of blood to the right side of the heart. In measles this bluish color is due partly to the cough, partly to the appearance of an eruption in the mouth, and in both conditions it sometimes helps in making a

diagnosis. It is not, however, characteristic of either condition, as, like the ulcer of the frenulum linguæ of pertussis, it may exist with any cough that is persistent or comes in frequent attacks, like the cough of enlarged bronchial glands or of tracheitis; or it may exist in troubles of the respiratory or circulatory organs which prevent the blood from returning to the heart, or in which the blood is insufficiently aërated, as in catarrhal pneumonia, pleurisy with large effusion, insufficiency of the valves of the heart, etc. If we add that a slight rise of temperature in an infant will produce erythema of the mouth, and that sometimes lesions of the skin of an erythematous nature are accompanied by the same change in the mouth, we have said all that need be said of this trouble which may be of importance from a diagnostic stand-point, but hardly in any other direction. It is doubtful, indeed, whether a simple hyperæmia can be accessory to the development of any other disease of the mouth. The form described in connection with pertussis might be looked at in this direction, but in many cases the border-line of erythema and inflammation is overstepped, and then we are dealing with catarrhal stomatitis, which is of far greater importance in all directions. In individual cases it may become very difficult to say whether it is erythema or something more that we are dealing with, although, as a rule, the tissues which are involved will readily clear up the question.

In catarrhal stomatitis the lesions are so well marked that, with ordinary care in examination, it is difficult to overlook them. In this form of trouble we have, as a rule, all the symptoms of inflammation,—swelling, heat, pain,—which manifest themselves differently according to location. The whole lining of the mouth is red, there is hypersecretion after the process is well under way, and the temperature of the mouth is increased. If we examine carefully it will be seen that the mucous membrane lining the cheeks is puffy; if there are any teeth, it is marked by depressions where the swollen membrane presses upon them. The color of this part of the mouth, especially of the depressions, is paler than the rest of the mucous membrane, and it is not uncommon to find these little valleys surrounded by elevations whose contours are marked by dilated

vessels. The slightest injury causes a rupture of these already weakened blood-vessels, so that slight hemorrhages or saliva mixed with blood is not infrequent. Over the hard palate the mucous membrane is not much swollen, for anatomical reasons; but the injection of the blood-vessels is well marked, sometimes general, at others more or less localized.

In older children the mucous membrane behind the upper incisor teeth is, as a rule, very puffy, although not very red, and very painful. In infants this part is also affected, but not to the same degree, yet not infrequently it takes upon itself a spongy appearance, although it does not appear faceted as in older children. The lips are swollen; if taken between the fingers they are more tense than normal, and their inner aspect is very much reddened. The surface of the mucous membrane is made uneven by small round prominences. These are the muciparous follicles whose ducts have become partially stopped up, or in which the secretion has accumulated so rapidly that the whole body of the gland is filled up. Sometimes there exists complete occlusion of the duct, then there follows an enormous dilatation of the gland, which manifests itself in the production of a cyst. When this cyst is opened a small quantity of mucus is discharged, but the cyst is liable to refill, emptying itself by being broken from time to time, and always forming again unless active treatment is used. This is a comparatively rare complication, and, as a rule, the ordinary glandular involvement of simple stomatitis runs its course, even without the production of ulcerations.

On the other hand, slight epithelial abrasions over these swollen follicles or in other parts of the mucous membrane are by no means rare, even in infants, although they rarely lead to the involvement of the deeper layers. The tongue is at first covered with a dry whitish coating, quite uniform over the whole surface; as secretion increases this becomes more moist, and is washed off in places, usually about the edges. With this, the tongue—its upper surface at least—may be slightly swollen, and its color soon changes. The coating is no longer of a chalk-white, but grayish or even yellowish, and it may look as if the epithelial layer might be stripped off in a flake without detriment to the organ itself. This does not occur,



however, as the process seems to affect the older cells only, rarely leaving the mucous membrane completely denuded, due undoubtedly to the fact that there is so much fluid present in the mouth. Through this coating the fungiform papillæ, very much swollen and injected, are visible. The tips of the filiform papillæ are involved in the general process going on in the epithelium, but their bases seem to remain intact even where the epithelium falls off, so that the tongue never has the appearance of a strawberry or the hilly, shaved syphilitic tongue. Where the epithelium is partly stripped off we have an intensely red color. The edges of the tongue are rounded off, and where there are teeth we find the same depressions noticed in the cheeks.

If with stomatitis catarrhalis there is associated a process accompanied by continuous fever (typhoid, remittens or the exanthemata), we have all that has just been mentioned; but after a few days the epithelium dries up and falls off, leaving a raw surface, sometimes fissured, the color of which varies greatly, principally on account of the quantity of blood present upon it. The whole mouth partakes to a greater or less extent in this change, producing the dry, cracked lips, the sordes upon the teeth, etc.

In all cases the lymphatic glands supplied by the mouth are more or less involved, and it is a safe rule to measure the grade of the stomatitis by the amount of enlargement there is in the lymphatics. There are mild forms of stomatitis catarrhalis that affect the patient very little; sometimes, even, we are astonished to find a very extensive inflammation with very little general reaction on the part of the patient. As a rule, however, the patient complains of well-marked symptoms which alone will lead the initiated to localize the seat of trouble in the mouth. There is usually present more or less fever, rarely going very high, going down to normal in the morning and up to 101°–102° F: (rectal) in the evening. In some children the temperature may go quite high (104° F.), and may require special attention.

The prominent symptoms of stomatitis are the manifestations of pain and the hypersecretion of saliva. The little patient, if an infant, goes at the breast with a good will, evi-

dently hungry, takes one or two pulls, then suddenly lets go of the nipple and begins to cry. By means of a little coaxing the mother will be able to succeed in getting the little one to try again, but the same result follows, and, finally, the baby refuses absolutely to be put to the breast, preferring to remain hungry to suffering pain. In the intervals between feeding the child may be cross and fretful; it may whine considerably, but does not cry out very much, as in some other forms of stomatitis. At the same time the child, if old enough, is drooling constantly, the saliva flows from its mouth freely, and the mother is apt to be happy over the whole condition because she thinks her baby is teething. This increased flow of saliva produces irritation of the skin over the lower lip, the chin, sometimes the neck, and many an eczema is started up by stomatitis. Long after the irritant—the saliva—has been removed the eczema still remains, and may give rise to eczema in other parts of the body or universal eczema. Bohn states that the reaction of the saliva may be neutral, never alkaline; I have never been able to find any other reaction than the acid one. As has been pointed out in the introductory chapter, not every infant or child drools, so that this symptom is frequently absent.

The effect of a simple stomatitis upon the general condition of a child or infant may be *nil* or it may be of the severest nature, even costing the child its life. Just as a nasal catarrh may prove fatal, so a stomatitis may kill by preventing the child from taking its food,—*i.e.*, more or less directly. This manifestly is the rarer modus; but given a badly-nourished infant which becomes affected with a stomatitis, and two or three days of complete abstinence from food will be sufficient to reduce the vitality to such an extent that recovery is impossible. Or the stomatitis may produce dyspepsia, catarrhal conditions of the intestine, and death in this way. It is not uncommon to see dyspepsia set up as the result of bronchitis, a coryza, or a stomatitis due possibly to the swallowing of something coming from one of the affected mucous membranes. This “something” may be an increased amount of fluid or fluid containing an irritant; in either case followed by reaction, which causes dyspepsia. The fatal termination, again, is rare;

but commonly do we find the child's nutrition suffering, so that great care and attention are required to save the child's life in attacks of other diseases.

It will be seen, therefore, that, *quoad vitam*, even this apparently trifling affection is of great importance. It may be stated, furthermore, that, once a child has had general stomatitis catarrhalis, the least irritant will produce a partial or general return of the trouble, so that in badly-nourished marantic children the condition becomes chronic. In healthy children this is not the case, although in them a running down is apt to be followed by another attack, provided the external causes are present. Infants are more liable to this disease than older children, although in the latter it is by no means uncommon, being overlooked in them on account of absence of symptoms.

(To be continued.)

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TONGUE AND LARYNX TRACTOR, FOR THE  
PERFORMANCE OF FORCED LARYNGOSCOPY  
IN CHILDREN. MOUTH-GAG AND CUPPED-  
OUT INTUBATION-TUBE, WITH FALSE METAL  
EPIGLOTTIS ATTACHMENT.

BY J. MOUNT BLEYER, M.D.,  
New York City.

AMONG the methods of examination which are at our disposal for the recognition of laryngeal disease in children, laryngoscopy takes the first place, and the results which are thus attained are of such great importance in diagnosis that I was led to devise some means which would assist in such a procedure. It is extremely difficult, by a mere verbal description, to explain clearly any process requiring the use of an instrument and skill. In such cases a single practical demon-



stration is of more value than a dozen pages of written directions.

This tongue and larynx tractor, which is represented in the accompanying illustration, I have successfully used in my last three hundred cases, which were operated on in the described manner (intubation of the larynx for stenosis). These cases were previously examined by forced laryngoscopy in order to ascertain the extent of the disease present. This instrument was found to facilitate the examination necessary in the majority of cases of acute laryngeal disease in children under four years of age. Such procedure is not to be underrated in importance, nor neglected on account of any personal disinclination to undergo the necessary trouble involved in making it. If such an inspection will disclose facts of diagnostic importance, surely it will not be neglected by any earnest physician.



Tongue tractor.

The tracting portion assumes the shape of the ordinary eyelid retractor. It is bent with a laryngeal dip. The handle has an angle suitable for simultaneously viewing and using the operating or inspecting field. The entire instrument is of antiseptic construction.

The above described was invented for the purpose of aiding in the elevation and expansion of the larynx, at the same time depressing the tongue, also forcing the epiglottis forward against the base of the tongue, which thus permits of a thorough inspection of, and operating on, the interior of the laryngeal vault.

## SUGGESTION FOR OPERATING WITH THE TONGUE AND LARYNX TRACTOR.

The patient is to be placed upon the lap of a nurse, who is directed to hold the child in an upright posture, facing the operator, the feet being most conveniently held between the knees of the nurse. With a towel envelop the body and arms, which are thus to be pinned securely. The gag is now inserted. At this stage of the operation a five-per-cent. solution of cocaine, with which the pharyngeal and laryngeal surfaces are to be thoroughly sprayed, or without any use of cocaine, as I often do when the examination is of a short duration. The operator passes the tractor down, and secures the base of the tongue, guided upon the forefinger of his left hand. Then drawing upon the base of the tongue, which favors partial elevation of the larynx, the tractor is to be passed upward, outward, and downward.

Enforced laryngoscopic examination in children is performed in the above-described manner, and there is no doubt that many advantages are thereby gained. Often a very common difficulty is met with in the position of the epiglottis, as more or less depressed, overhanging the larynx, or compressed and rolled together at its sides. By forcing and steadying the epiglottis against the base of the tongue this difficulty is nearly obviated, and a thorough view of the larynx and neighboring parts may be viewed and treated. Local application to the larynx and deep pharynx can be easily made by its aid.

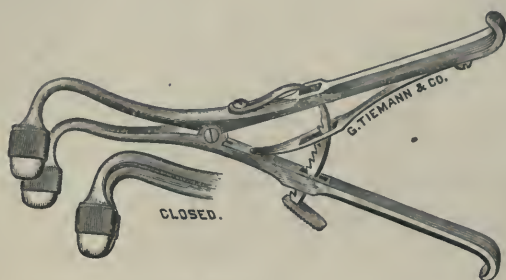
The degree of success will depend upon the skill of the operator. Small laryngeal mirrors, the No. 2 or No. 3, and a perfect illumination are necessary factors.

Other important advantages of this instrument are that where there might occur some difficulty in extracting a tube after intubation, extraction is performed after elevation of the larynx with any ordinary forceps.

Examinations of the larynx can be made at any time during the wearing of the tube, in order to view the tube for any sudden unforeseen circumstance, and thereby gain an immediate diagnostic point.

Other modes of forced laryngeal examination of children have been in vogue by Rauchfuss, Horace Green, Voltolini, Tobold, and Piorry.

This mouth-gag, which is herein represented, will be found to have superior qualities in its construction in many points. I have found that all other gags are very troublesome to introduce into the mouth of the child on account of the shoul-



Mouth-gag.

ders of the alveolar processes of the gagger, which are very large, and especially when one has to deal with a stubborn patient, who will not begin to open his mouth. This led me to have a wedge attachment made to the side of the alveolar process, and very low shoulders, in order to help to open the mouth and thereby slipping immediately the gag in between the angles of the jaw. The alveolars of the gag are padded with soft rubber, and which can be changed in every case; thus no damage is done to the teeth, and where no teeth exist the gums are protected thereby. The shoulders are very low, so that while the gag is in position it will not press upon the hard palate and crush in the same, as I often had experienced. Slipping of the gag is avoided by the anatomical construction of the angles of the gag; also the soft-rubber padding keeping it in place by the indentation of the teeth.

The separating of the jaws by the gag can be accomplished to any degree and with ease. Also it lays flat upon the cheek, and is self-retaining.

To Dr. Charles E. Denhard, of New York, I must credit the principle of this gag.



## DR. J. MOUNT BLEYER'S CUPPED AND FALSE EPIGLOTTIS TUBE.

This tube is an improvement upon the soft-rubber false epiglottis of Dr. T. E. Waxham, of Chicago, to whom all honors should be given for this ingenious idea.

When one has operated many cases he begins to see the necessary wants and deficiencies which exist.



G. TIEMANN & CO.  
Cup and tube.

These tubes have many advantages over the first tubes of Dr. O'Dwyer. They are cupped out at the head, and admit of the extractor engaging itself into the tube, and thereby the extraction made easy. A metal-hinged artificial epiglottis, which is intended to assist the patient in swallowing, to prevent the falling of foods and fluids through the canula into the bronchi, and to guard against the dangers of broncho-pneumonia.

Since the use of these tubes I have had better results.

This set of instruments was made for me by the well-known house of George Tiemann & Co., 107 Park Row, New York.  
83 SECOND AVENUE.

## LOCAL TREATMENT IN DIPHTHERIA.

BY J. HENRY FRUITNIGHT, A.M., M.D.,  
New York,

Fellow of the American Academy of Medicine, of the New York Academy of  
Medicine, etc.

THE presentation of this subject to the New York Academy of Medicine last winter by Dr. C. E. Billington, and the discussion which it elicited, are a cause for gratification, inasmuch as they were most opportune. The subject was *à propos* because by many local treatment, if not avowedly discarded in the management of this disease, has been either tacitly neglected or imperfectly practised of late. To borrow a phrase from the science of political economy, this *laissez-faire* policy is the result of what Dr. Billington has aptly stigmatized as an "optimistic" reliance upon the favorable issue in exceptional instances of the disease which had not undergone topical treatment.

It will not be controverted that diphtheria presents both local and constitutional symptoms, but the disputed question whether it is primarily a local affection followed by secondary constitutional symptoms or *vice versa* will not be discussed here.

If, then, we have these two factors presented to us in the evolution of the disease, our logical conclusion must be that we ought to treat these cases both locally and constitutionally, irrespective of whatever theory concerning the nature and development of the disease may be correct.

Most of the remedies used with the intention of producing constitutional effects also, to a certain extent, act locally. I need but mention the muriated tincture of iron, chlorate of potash, and the bichloride of mercury as among the most prominent. You doubtless will be able to recall some others.

In the act of deglutition these remedies always come in contact with the vault of the pharynx, including the upper portion of the fauces, the tonsils, and the immediately-adjacent parts. I always advise the patient, when he or she is old enough to do so, to retain the dose in the buccal cavity for several minutes before swallowing it, in order to get a more prolonged local action from the medicine. In the exercise of this manœuvre I tell the patient to draw the dose as far back in the mouth as possible before swallowing. It is to be observed that this method is not that of gargling exactly, but rather an extension thereof.

In all of the recent discussions one remedy, which had been employed in this and other zymotic diseases formerly for its constitutional effect *alone*, but which I have used for its local action, has not been mentioned. I refer to the hyposulphite of soda.

Though, as I have just remarked, this remedy had already been used in the past for its constitutional effect, it is only recently that I learned of its efficacy as a local remedial agent. It is but just to say that the remedy was suggested to me by Dr. Brickelmaier, a laryngologist of repute in this city, in an informal conversation anent the various remedies which were used to act upon deposits and exudations in the throat. The doctor spoke so flatteringlly of the hyposulphite of soda that I determined to employ it in the next cases that I should be called upon to treat.

In the past year I have treated about thirty cases with this remedy, in the strength of  $\text{3i}$  ad  $\text{3ii}$  aquæ, of which the dose was  $\text{3i}$  for children under twelve months old, and to older children  $\text{3i}$  has been administered of a solution of the strength of  $\text{3iss}$  of the medicine to  $\text{3ii}$  of water. The remedy was administered every two hours. Several adults were among those afflicted, and the solution in their cases was of the strength of  $\text{3ii}$  to the  $\text{3ii}$  of water, of which the dose was  $\text{3i}$ . In the most of these cases I will say that the pseudo-membrane appeared in the upper portion of the pharynx or on the tonsils and uvula. In a few it extended a short distance down into the larynx. In these last cases the hyposulphite of soda was used sometimes in a spray atomizer, and in older children it was applied to the part affected with a brush. Where the patient is too young to comprehend the direction to hold the dose in the mouth, and the deposit is confined to the buccal cavity, here, also, it can be used in the atomizer.

What has thus far been said about the hyposulphite of soda has had reference to its use as a local remedy, but the medicine also has most probably a constitutional action. The hyposulphites, in common with the sulphites and bisulphites, have been used in medicine in consequence of their hostility, by virtue of their acid component, to the lower forms of animal and vegetable life. Hence this group of remedies would seem to have a special action against zymotic diseases, under which category diphtheria is embraced; and, reasoning from these premises, physicians were led to its use in such constitutional diseases, and as a corollary thereto to regard it as a local antiseptic or germicide. But it is to its use as a topical agent that I would specially direct attention, disclaiming, however, that it will always cure and never fail, for there will always occur cases which will inevitably result fatally, no matter what may be done for them. Among my thirty cases, alluded to above, two deaths occurred. Of course, strict attention should be paid to the constitutional treatment as well. The local and general treatment should reinforce each other and proceed hand-in-hand. The nutrition should be watched and improved, and no case of diphtheria should ever be deprived of iron. To treat the local manifestations only would be illogical, and to



employ constitutional measures only would be to ignore a dangerous and insidious foe.

In regard to the method of making local applications, it will be conceded that all rude and forcible manipulation must be shunned. The brush, sponge, and cotton pledget, as ordinarily used, must be condemned. In intelligent hands it may be permissible to employ them, but even then with extreme caution, lest a solution of continuity in the tissues be produced which may become the site of autosepsis. The gentler the application the more favorable is it to be considered; hence the spray atomizer is to be preferred in nearly all cases for the buccal and laryngeal varieties of the disease, and a suitable syringe carefully used for the nares and post-pharynx.

161 WEST FIFTY-SEVENTH STREET, NEW YORK.

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## AN EPIDEMIC OF RÖTHELN WITH UNUSUAL AND DANGEROUS SEQUELÆ.

BY W. H. GREENLEE, M.D.,

Waynesville, Ohio.

RÖTHELN is usually a disease so mild in character that oftentimes no treatment whatever is instituted. It has heretofore been regarded as almost wholly free from dangerous complications or sequelæ. But I wish to present some remarkable features of an epidemic which prevailed here during last April and May.

The first case I was called to see was that of a boy, who presented the typical eruption, which I was told appeared suddenly and without any prodromal symptoms. He had had the measles a year before, and this fact, together with the state of his temperature ( $101^{\circ}$  F.), led me at once to diagnose the case as one of rötheln. This was the first case, to my knowledge, occurring in the vicinity, and from that time it began to spread until we had quite an extensive epidemic, extending over two months.

During this time my partner and I had the opportunity of observing more than sixty cases. These were about evenly

distributed between both sexes, and ranged in age all the way from two up to twenty years, the majority, however, occurring under ten years of age.

The unusual and distinguishing feature of the epidemic was that while the disease appeared to be very light during the attack,—the children playing about and attending school as usual,—it was followed in thirty cases by severe catarrhal pneumonia, and in three by scarlatina. In each of these there was a distinct history of rubeola, and, besides, the characteristic symptoms of measles were so entirely absent that there could be no mistake in the diagnosis. The eruption disappeared in from three to four days, and in no case did the temperature exceed 102° F. But after a time varying from five to sixteen days from the apparent restoration to health the pneumonia and scarlatina, above referred to, developed.

This naturally suggests the question, Why should such sequelæ show themselves in connection with a disease characterized by so few and unimportant pathological lesions?

Judging from the history of the London epidemic which occurred a few years ago, where the rötheln was followed closely by an epidemic of scarlatina, we would conclude that an attack of rubeola rendered the individual peculiarly liable to the entrance of the scarlatinal poison.

The pneumonitis subsequently developing may be accounted for by (1) the character of the season, and (2) lack of care of the individuals attacked with the rötheln, due to a misapprehension of the serious nature of the disease.

The spring was unusually changeable, bitterly cold, alternating with warm days, and attended with a more than ordinary degree of moisture. The parents, thinking the trouble of no moment, permitted their children to expose themselves freely even during the stage of eruption, and the pneumonia was the result.

This epidemic affords a good illustration of the danger of underrating the significance of a disease, and also emphasizes the importance of remembering that any of the acute infectious diseases may give rise to dangerous sequelæ, which, of course, will appear in a more extensive invasion of the organ or part previously attacked by the specific poison.

## Current Literature.

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### I.—HYGIENE AND THERAPEUTICS.

**Cheadle :** On the Present Position of the Study of Diseases of Children in Relation to Medical Education. An address delivered before the Pediatric Section of the British Medical Association, Glasgow, August, 1888. (*British Medical Journal*, August 18, 1888.)

Dr. Cheadle states that he would not advocate establishing children's diseases as a new specialty, but he would urge on the student a special study for those diseases. To general practitioners especially, who form the bulk of the profession, ample practical acquaintance with diseases of children and infants is of vital consequence. Children form the majority of their patients, and the fragile growing bodies of infants are particularly susceptible of being influenced by treatment for either good or ill. They require a discrimination and skill beyond the common.

Moreover, the physician is generally obliged to deal with most cases alone, because so many of the disorders of childhood come on too quickly to allow time to send for a specialist, as one could do in cases of blindness, deafness, etc. The mortality among children is eight or ten times as great as among adults, and yet we are content to send out students inexperienced and untaught in this necessary branch, while well-provided with instruction in diseases of the eye, ear, and skin, which will be of far less value to them. He also calls attention to the defective teaching in regard to children's diseases, which he regards as a blot upon our system of medical education, and to which Latham and Sir Thomas Watson called attention forty years ago.

He affirms that we have not progressed since then, and says that he feels competent to judge, having been for some years examiner in medicine, dean of a medical school, and physician to two hospitals. In examinations he has made it a rule to ask questions on children's diseases, and has found the students lamentably ignorant of the subject, although passing well in other branches. Most of them have had no clinical experience in that branch, and some have never seen a case of infantile convulsions, of choleraic diarrhœa, or of thrush. Doubtless numbers of men learn to treat children with skill, but this knowledge is acquired after their student days are over, by actual practice.



Some, seeing the children's hospitals that have been founded and the children's wards in general hospitals, may think that great progress has been made; but on close examination this advance will be found to be illusory, as in these hospitals, with one exception, children under two years are not admitted, the reason being that they require more nursing, are more costly, and raise the death-rate of the hospital. This period under two years, he goes on to say, is the one most fruitful in distinctive diseases of childhood. It is the representative period, when congenital faults of structure and inherited disease betray themselves; the period of all the disorders of feeding and dentition and their consequences; of congenital syphilis, of rickets, scurvy, diarrhoea, atrophy, convulsions, and intussusception. The out-door departments are open to the youngest, but in these the physician labors under the disadvantage common to out-door practice.

Dr. Cheadle considers children's hospitals of little advantage to the student, as they are crowded with older practitioners, and as attendance is not compulsory and the subject not prominent in examinations. He says he bases his data upon information obtained from every school in London and almost every one in Great Britain, and he finds that, with two exceptions, the provision for teaching students in this branch is utterly inadequate. Only about half the hospitals have children's wards or give any instruction in the subject. He concludes by saying that dark as is the picture, as it is as true as dark, very few schools have attempted any reform. Having pointed out the defects he makes a few suggestions towards a remedy, viz.:

1. Let the examining bodies make it clear that a competent knowledge of children's diseases will be required at the final examinations.

2. Let them require, as a part of hospital practice, attendance on a three months' course of clinical instruction in diseases of children and infants at a general or special hospital.

3. Let children under two years be admitted to children's wards of the general and special hospitals.

4. Let an organized system of instruction—practical instruction and lectures—be introduced at each medical school.

Russon: *Statistics of Tendency to Disease (Morbidity) in Children at Particular Periods of Life (Conclusion).* (*Jahrb. f. Kinderh.*, xxvii. 4.)

The period from the sixth to the ninth month is characterized by an exaggeration of those processes which begin at an earlier period. Dyspepsia diminishes in frequency, while gastric

catarrh increases. - Intestinal catarrh is about as frequent as in the period immediately preceding. Chronic catarrhs increase in frequency, especially in the form of catarrhal colitis, demonstrating that the function of the digestive canal is so active that irritations are prone to occur in this period not only in the stomach and smaller intestine but in the large intestine also. It is the period of diet with farinaceous foods, when the child is freely taken out of doors, wears short clothes, and hence is more exposed to the influence of cold.

Catarrhs of the air-passages are as frequent in this as in the precedent period, those of the mouth and pharynx being more frequent. In this period the aphthous and vesicular affections of the oral mucous membrane begin to appear, conditions which may depend, more or less, upon the eruption of the teeth which are due during this period. Catarrhal and diphtheritic angina also become more frequent with increased exposure to the air outside the house. The habit of weaning during this period, which prevails in many localities, is accountable for not a few of the diseases. With the exception of laryngeal and bronchial catarrh, all forms of inflammation of the mucous membrane of the respiratory organs and passages are more frequent, and the same is true of all forms of infectious disease, also those which depend upon disturbances of nutrition, most notable of which is rachitis. These disturbances all take place at a time when the organism stands in the greatest need of force in order to its proper physiological growth, the production of the teeth and the definite formation of the cranium.

The fourth period of the first year of life includes nearly seven (6.95) per cent. of the total number estimated to occur during the first two years. Of the entire number (in this period) about twenty per cent. are cases of intestinal catarrh, four per cent. catarrhal pneumonia, eighteen per cent. bronchial catarrh; other diseases of the air-passages are about as frequent as in the precedent period, with the exception of laryngeal catarrh, which is somewhat more frequent.

Affections of the mucous membrane of the mouth and pharynx are more frequent, and so are follicular angina and diphtheritic angina. There is a slight increase in chronic intestinal catarrh, follicular enteritis, measles, and typhoid fever, other infectious diseases not showing much change. Diseases due to disturbed nutrition are also more numerous.

It appears from the foregoing that during the first year of life those organs suffer most which undergo the most development, on account of their greater susceptibility and their greater vital activity; also those portions of the organism are

most susceptible to irritation which are first brought into contact with out-of-door life. The morbidity of the first year of life may, therefore, be said to be upon the surface, in the sense that only that part or organ is affected which comes in contact with causes of irritation. There is a marked infrequency during this period of diseases of the kidneys, heart, and liver.

The morbidity of the second year of life is only exceeded by that of the first. It includes, to the extent of sixty per cent., catarrhal conditions of the digestive and respiratory organs, infectious catarrh, the exanthemata, and other infectious diseases being excluded. Premature weaning has much to do with the relatively large number of gastric and intestinal inflammations, as also has the premature and improper use of farinaceous foods and meat at a time when the pancreas is just beginning its normal function, and the milk-teeth have either not appeared or are not yet ready to perform their function. The relative frequency of the different diseases of the second year of life is best seen by the following table of percentages:

	Per Cent.
Bronchial catarrh includes.....	22.70
Acute intestinal catarrh.....	21.15
Rachitis.....	11.23
Colitis.....	9.54
Dyspepsia.....	3.46
Eczema.....	3.46
Catarrhal pneumonia.....	3.32
Chronic intestinal catarrh.....	3.18
Febricula.....	3.10
Whooping-cough.....	2.69
Bronchitis.....	1.38
Influenza.....	1.34
Catarrh of the stomach.....	1.00
Catarrhal stomatitis.....	1.08
Acute laryngeal catarrh.....	0.82

During this period there are still relatively few cases of epidemic disease, and also of those which involve the deeper-lying organs. The importance of rachitis during this period is noteworthy, since it occurs far more frequently than at any other period of life.

By a study of the diseases which occur during the first twelve years of life it appears that 57.53 per cent. occur during the first two years, and in Russia, the country to which these statistics have immediate reference, the mortality during the same brief period is thirty-two per cent. A. F. C.

Noël: Treatment of Diphtheria by the Internal Use of Borax. (*Le Concours Méd.*, May 26, 1888.)

The use of the author's method of treatment for the past four years has given him the most gratifying success, and has



inspired him with absolute confidence in its value. He does not consider the disease as a local one with the false membrane for its principal element, but as a general infectious one, and his theory is to turn into the circulation a sufficient quantity of the medicative agent to reach the poison of the disease in every part of the organism. The necessary means of treatment must be an antiseptic, and borax was selected, as it could be given in large doses without the injury or danger which might follow the use of the more poisonous antiseptics. It was first tried in an epidemic, in which it was the only medicative agent given to sixty patients; only two or three cases resulted fatally. The action of the drug produced abundant salivation in a very short time. Being eliminated by the muciparous glands of the throat and the salivary glands, it tends to soften, dissolve, and remove the false membranes. The dosage is fifty centigrammes to one gramme for children under one year of age, one gramme to one gramme and a half for those from two to five, two grammes from five to ten, three, four, or five grammes for adults, according to the strength of the patient and the gravity of the disease. The author has even used a daily dosage of twelve to fifteen grammes, but with no better success than when only four or five were given. The medicine should be divided into equal doses for every hour, but sleep is not to be interrupted for its account. Its use should be continued long after the false membrane has disappeared, though in decreasing doses, and it may be administered in any convenient medium. No local treatment of any kind, no insufflation of powders, nor use of emetics are allowable in connection with this treatment.

A. F. C.

**Love:** Dietetic Treatment of Summer Diarrhœa of Infants. (*Weekly Medical Review*, August 18, 1888.)

The author believes that the dietetic treatment of alimentary disturbances of children, if applied early enough, will in the majority of cases be all that is sufficient; and in exceptional cases, due to internal congestions, as from chilling of the surface, it forms the most important part.

If the mother cannot nurse her child, a wet-nurse, healthy physically and morally, should be procured, or if that be not possible, artificial feeding must be resorted to. But whatever the food may be, the chief thing to correct is errors in diet,—“more babies are stuffed to death than starved.” In the majority of cases an acute indigestion, however severe and whatever its cause, can be relieved by judicious starving, and the removal from the alimentary canal of the offending indigestible matter by prompt purgation. If digestion becomes

impaired, regulate the quantity as well as the quality of the food.

Give the babies at all seasons, but particularly in the hot months, an abundant supply of pure water, previously boiled and cooled. Next to breast-milk the author advises cow's milk, either in its purity, or so prepared as to prevent the formation of hard and tenacious curds. While admitting the difficulty of obtaining the milk fresh from the cow, especially in the cities, and the danger of fermentative changes having commenced in it, he still urges its use and the resort to severe sterilization and strict cleanliness to prevent these changes.

In acute disturbances the withdrawal of all milk diet is often necessary. Finely-chopped raw meat has been recommended, and is excellent but for the dangers of tape-worm. In place of the raw meat the author uses Bovinine (a peptonized fluid extract of raw beef combined with pure egg albumen), in doses ranging from ten drops to one teaspoonful, properly diluted, every two hours. In some cases the addition of a few drops of cognac or blackberry brandy is advisable. Pure egg-albumen water (white of one egg to half a pint of cold water) makes a good temporary food in other cases. Condensed milk more or less diluted is often of service, but the author does not believe it is an ideal food for permanent use, since, while it increases adipose tissue, it does not build up muscle and bone.

The author, from his own experience, commends the Fairchild peptogenic milk powder in cases of indigestion, but does not favor the constant and habitual use of completely predigested foods. He claims that physicians do not take the trouble to sufficiently elaborate their instructions, or go into details in giving directions, and if they would correct this, and give practical demonstrations to the mother regarding the preparation of the food recommended, they could accomplish more in the dietetic treatment of their patients. Each case is a law unto itself. Babies must have a varied diet. Farinaceous foods are injurious to young babies. The addition of malt produces the same change in the starch as is produced by the salivary and pancreatic secretions. Dependent upon this principle is Liebig's food, which contains wheat flour, malt, and a little carbonate of potash; it has gained a well-deserved celebrity. A similar but more palatable food is Mellin's. The author gives it occasionally in plain water, but more frequently in milk and water (one part to eight), a teaspoonful to half a pint. It breaks the curd, aids digestion, and adds an element of nutrition.

Whitelegge: Age, Sex, and Season in Relation to Scarlet Fever. Epidemiological Society of London. (*British Medical Journal*, June 2, 1888.)

The paper gives an analysis of upwards of six thousand cases. It shows that the liability to scarlet fever is slight in infancy, reaches its maximum in the fourth or fifth year, and diminishes every year afterwards. The severity of attack is greatest in the first two years, and lessens year by year afterwards.

Females are more liable to attacks than males; but the attacks in males are more severe, and the death-rate consequently higher. The scarlet fever death-rate reaches its maximum in the third year of life in both sexes.

The advantage of postponing an attack is twofold: each year of life beyond the fifth diminishes the susceptibility, and lessens the average severity of attack should it occur. As regards season, the maximum of cases and of deaths occur in October, and the minimum in April. It is probable that a scanty rainfall is favorable to the spread of the disease.

Besides the seasonal curve it is possible to construct a weekly curve, showing the number of attacks on each day in the week. The results indicate a marked reduction in the number of attacks on Wednesdays, presumably due to less facility for infection on Sunday.

Infection from a previous case is the most obvious explanation of many cases of human scarlet fever, and may be true of all, or nearly all; but it cannot be the whole truth. Some further explanation is needed to account for the well-marked seasonal and other variations in the prevalence of the disease.

Krukenberg: Experimental Investigations concerning the Transfer of Formed Elements from the Mother to the Foetus. (*Jahrb. f. K.*, xxvii. 4.)

The earliest experiments for the determination of this question were made by Reitz in 1868, who injected cinnabar into the veins of pregnant rabbits, and recovered a certain portion of it in the blood of the heart and in the capillaries of the brain of the foetus. This method was not considered entirely satisfactory, for Hoffmann and Langerhaus obtained negative results by the same means, and so did Fehling, Thierfelder, and Ahlfeld in their experiments with Chinese ink. Caspary, who injected an emulsion of cinnabar into the jugular vein of a pregnant rabbit, found cinnabar granules in the placenta and in the blood of the umbilical vessels, but the experiment was considered inconclusive, for the animal died during the injection, and the placenta contained an abundance of cinnabar. Perls injected the jugular vein of pregnant rabbits partly with



cinnabar and partly with ultramarine, and found fine granules of the same here and there in the foetal blood; but he was unable to draw any conclusions therefrom. Equally inconclusive were the experiments of Mars, Pyle, and Meropolsky. Krukenberg made two experiments, as follows:

1. He precipitated barium sulphate from a solution of barium chloride by means of a weak solution of sodium sulphate, and injected the central end of the crural artery of a pregnant animal. Whether the quantity injected were large or small, he was unable to find the slightest trace of barium in the tissues of the foetus.

2. He injected pure cultures of *Bacillus prodigiosus* partly into the veins of the ears and partly into the jugular veins, and killed the animal a quarter of an hour to an hour subsequently. Examination of the foetal blood in this case was also negative as to results. If, therefore, we are to conclude that cinnabar and ultramarine can be transferred to the foetus, but *Bacillus prodigiosus* cannot, by this means, it is evident that inorganic particles can injure the walls of the placental vessels, or that cinnabar and ultramarine are quickly taken up by the white blood-corpuscles, which is not the case with the greater number of varieties of bacteria.

A. F. C.

Tedeschi: The Treatment of Rachitis. (*Rev. Mens. des Mal. de l'Enf.*, June, 1888.)

In 1884 the author advanced the hypothesis that rachitis was the result of an alteration in the nerve-centres, the nature and cause of which were as yet undetermined. This hypothesis showed the unsatisfactory nature of all other explanations which had been given as to the pathogenesis of the disease, and also rested upon the following propositions:

1. The nervous symptoms which accompany the disease are susceptible of abatement.

2. Rachitic patients have a tendency to present not only isolated nervous perturbations, but also diseases of the central nervous system.

3. There is great resemblance between rachitic changes of the bones and those which can be provoked experimentally in animals by producing lesions of the central nervous system, and also those which are seen in the bones of certain persons who suffer from nervous diseases.

4. There is perfect and constant symmetry in the bony lesions resulting from rachitis.

5. The results of the treatment of one hundred and thirty-nine rachitic patients by galvanization of the spinal cord have been surprising. The author has also been apprised of ex-

cellent results from galvano-therapy in the treatment of one hundred and forty-nine rachitic patients by other physicians, and, therefore, adds to the precedent propositions that the new theory of Kassowitz, which ascribes the origin of the rachitic lesion to an inflammation of the adventitious layer of the bones, does not detract from the value of his hypothesis, since it has not yet been demonstrated that phosphorus (Kassowitz's treatment) acts upon the bony system without the assistance of the nervous system. The direct action of phosphorus upon the nervous system, and upon the spinal cord in particular, which has been shown by experiments in pathological physiology, as well as by the clinical investigations of Dujardin-Beaumetz, Thompson, and others, imposes a certain reserve regarding the acceptance of the opinion of Kassowitz, that phosphorus exercises a local specific action upon certain tissues without regard to the indirect action which the nervous system might exert in producing the given lesions. Kassowitz divided the sciatic nerve of a poorly-developed rabbit and then gave it phosphorus. He then demonstrated by examination of the bones on the paralyzed side that there were histological modifications identical with those which were found on the healthy side, after the phosphorus treatment had been instituted. The same author had previously shown the extensive changes which the bones in the leg of an immature rabbit undergo after section of the sciatic. It is such an easy matter to differentiate the action produced by the phosphorus from that produced by section of the sciatic, especially when both causes are in operation at the same time.

These reflections and experiments do not make the author the enemy of the phosphorus treatment in rachitis. After a careful examination of the results which have been obtained by various physicians who have used this method of treatment, the author concludes that while the phosphorus treatment cannot be regarded as specific for rachitis, it must be recognized as a useful means, especially when the phosphorus is given in connection with cod-liver oil. Many cases of rachitis of moderate intensity are cured simply by the use of proper hygienic treatment, and it may be that the oil which is given with the phosphorus is entitled to a large share of credit for any successful results which may be obtained. A. F. C.

Schmiedler: The Treatment of Diphtheria. (*Rev. Mens. des Mal. de l'Enf.*, June, 1888.)

Attention is first called to the fact that in the majority of cases of diphtheria the local manifestations precede the general infection. It must also be remembered that it is of importance

to act upon the local disease by means of mild antiseptic substances which will not irritate and the therapeutic action of which is certain, to treat the neighboring lymphatic glands with ice and with mercurial ointment, and to combat the general infection with antipyretics only, of which quinine is to be preferred, also to make use of such so-called specifics as chlorate of potash, etc. This treatment is evidently applicable only to such cases as are accessible to sight and touch. Upon the diseased surfaces the author is in the habit of applying a one-per-cent. solution of carbolic acid or pure oil of turpentine. The latter is to be preferred from the facts that it is non-irritating, is not a caustic, rapidly dissolves false membranes, and has a very decided antiseptic action. The applications should be made with great care every three hours, and the child should not be allowed to drink for a quarter of an hour after each application. Lime-water and solution of carbolic acid should be evaporated in the bedchamber alternate hours. The neck should be surrounded with an ice-bag, and mercurial ointment should be rubbed into the enlarged glands. For internal treatment calomel should also be given at the beginning of the disease both for its laxative and its antiparasitic effect. Sulphate of quinine should also be given in sufficiently large doses, chlorate of potash in small doses, and also sufficient quantities of benzoate of soda combined with sulphuric ether. If it is not practicable to use oil of turpentine externally, it may be given internally in five-drop doses, with water or wine, three or four times in the twenty-four hours.

A. F. C.

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II.—MEDICINE.

Love: Cholera Infantum. (*Weekly Medical Review*, July 7, 1888.)

The author opens his paper with an exhaustive description of a pronounced case, which he says has received its name from its close resemblance to Asiatic cholera. He adds, though, that the disease may more correctly be considered analogous to cholera morbus, since, though probably non-infectious, it is undoubtedly due to a septic cause at work in the alimentary canal.

The majority of cases have a prodromal stage of disturbed digestion, a fermentative dyspepsia, and in those cases that have no such history, it has probably been overlooked. Some cases are very sudden, resembling sunstroke, thereby suggesting the possibility of the disease being a neurosis, and that the violent



exosmosis of serum through the alimentary canal's mucous lining is due to a disturbance of the vaso-motor centres. These exceptional cases may be thought to resemble Asiatic cholera rather than the infectious matter due to septic germs. Probably in these cases the intense heat produced violently acute indigestions and collapse, as in cholera morbus, because intense heat and atmospheric conditions, which depress the nervous system, tend to superinduce attacks of indigestion, more or less severe, in both infants and adults.

The withholding of a proper amount of pure water, as a drink, is a marked factor in producing conditions favorable to infantile troubles in general; and where cases can be traced to such a cause, the proper relief is a liberal supply of cooling drink. The author believes that the judicious use of good, pure cold water will serve as a prophylactic against the disease. He advises giving it freely to the little patients, for, even if rejected, it washes out and cools the stomach, makes vomiting easier, corrects the violent retching, and, if retained, will reverse the exosmotic current and re-establish absorption.

The author believes strongly in the preventive treatment, and when called early, before the stage of collapse, when the temperature is high, favors cooling baths and infinitesimal doses of calomel to soothe the offended lining membrane of the stomach and bowel, and also for its antiseptic and antifermentative effect. Before the stage of extreme depression he gives antipyrin in one- to two-grain doses as a sedative and reducer of temperature. If rejected, he gives half the amount hypodermically, in ten to fifteen drops of good brandy. In the stage of collapse the child is unable to swallow, pulseless, barely breathing, temperature subnormal, skin cold and cyanosed, everything pointing to stimulation. In this condition the author recommends a warm bath containing alcohol, and as an aid to reaction one-three-hundredth of a grain of sulphate of atropia hypodermically. He favors the hypodermic method for the administration of remedies, because of the faulty absorption by the stomach and bowels, or if absorption be re-established, the danger of accumulated doses. Stimulants, predigested milk, and pancreatinized oils he gives by baths and inunctions. Suppression of urine, he says, is more apt to be due to the absence of water from the tissues and blood than to engorgement of the kidneys, but the kidneys should be watched. Cerebral disturbance is more likely due to anæmia of the brain, and a possible effusion, than to active hyperæmia, but a danger to be anticipated is hydrocephalus.

During the stage of convalescence the danger of a subsequent enterocolitis should be borne in mind, and the diet regulated

accordingly. Animal broths, peptonized milk, Bovinine, and Mellin's Food will be of service at this stage, or well-diluted condensed milk. But whatever is selected should be used temporarily only, the child, as soon as convalescence is sufficiently advanced, returning to its former food.

Rachford : Some Points in the Etiology and Pathology of Summer Complaint. (*Medical News*, September 1, 1888.)

The author states that summer complaint is of bacterial origin, and consequently infectious; the pathogenic bacteria being the organized ferments of food-stuffs.

Summer complaint, however, is a general term, descriptive of quite a large number of diseases. In the majority of cases the infectious element is so obscure as to be overlooked, but a variety exists in which it is so marked as to be characteristic.

This difference in the degree of infectiousness indicates that each type has a germ peculiar to itself, and that there is a difference in the facility with which these germs pass from host to host. Being unable at present to trace the parasites from host to host, there is uncertainty in speaking of the special characteristics of the germs which determine the infectiousness of these diseases.

The author gives the following observations: The germs escape from the body in the discharges from the alimentary canal. The germs of abnormal intestinal fermentation enter the intestinal tract in the food and drink of the child.

The germs of normal intestinal fermentation enter the intestinal tract in some other way,—the intestinal tract of an infant fed entirely on mother's milk (a sterile food) is filled with bacteria.

These normal germs are always present, are universally distributed, and resist every destroying agency. They are probably necessary to infantile digestion. Consequently, if by giving antiseptic cathartics, such as calomel, to get rid of the pathogenic bacteria, the normal varieties are also driven out, it does not signify, as the next hour would find the canal filled with them.

The pathogenic germs cannot live in a state of desiccation, hence on leaving the intestine they must find a suitable nourishing material in which to live as a saprophyte until they can accidentally enter the baby's food and drink. This will explain their greater abundance in cities, where conditions for their saprophytic existence are everywhere present, and also their greater presence in warm weather, since these conditions are destroyed by cold.

From these observations it follows that a cool climate, sterile

food, sunlight, fresh air, and cleanliness are the great prophylactic measures against this disease.

Sterile food is better in the prevention than in the treatment of this disease; for if fermentation be present in the intestine, it will continue whether the food be sterile or not. But if milk be given at all, sterilize it, otherwise new and more dangerous bacteria may complicate the already existing disease.

The action of the bacteria in producing summer complaint is threefold: By interfering with the growth and function of the normal bacteria,—bacterial indigestion. By the formation of irritating materials during the fermentation of food-stuffs,—abnormal intestinal fermentation. By the formation of ptomaines, which act as physiological poisons,—ptomaine-poisoning.

The normal bacteria play an important rôle in the digestive process, especially in infancy, by producing soluble ferments, which change starch to sugar, albumens to peptones, fats to fatty acids and glycerins, and, acting as organized ferments, produce the normal fermentations of food-stuffs. Between the different species of bacteria, in the same culture, an antagonism exists, which results in the survival of the fittest. Consequently bacteria, otherwise harmless, may cause digestive derangements by destroying the normal bacteria, and the ordinarily wholesome food will pass through the intestinal tract of the infant and appear in the stools undigested, the cause of the trouble still remaining,—viz., the abnormal intestinal bacteria. Whereas if the food was indigestible, after its removal the child would be practically well.

Abnormal intestinal fermentation is probably the great cause of summer complaint. The author speaks of two forms,—acid and putrid fermentation. In acid fermentation he believes the symptoms are due to irritating materials, formed by abnormal intestinal fermentation of carbohydrates, instead of poisonous alkaloids. In putrid fermentation there is no evidence of ptomaine-poisoning, but the symptoms are due to irritating chemical materials, formed from food-stuffs, during fermentation.

Ptomaine-poisoning results from the abnormal intestinal fermentation of albuminates. And the symptoms so overshadow all others in importance and violence that they constitute the chief element of the disease. The characteristics of each case of ptomaine-poisoning, as to symptoms and violence, depend upon the quantity and poisonous properties of the particular ptomaine formed.

The author thinks his three classifications will be of value from a clinical stand-point, since the symptoms and treatment of each class must be radically different.



Paulinis: Concerning the Origination of Human Diphtheria from a Similar Disease in Birds. (*Rev. Mens. des Mal. de l'Enf.*, March, 1888, and *Bull. Méd.*, January 22, 1888.)

At the time when Nicati published some statements tending to demonstrate the identity of the contagious element of diphtheria in children and chickens, Mégnin, as the result of numerous observations and microscopical investigations, also published statements denying such identity. This was in 1879. Since that time, thanks to the development of bacteriology, Loeffler and Cornil and Babés have shown the almost complete identity of the bacilli found in the false membranes of children and birds. More recently this statement has been confirmed by the investigations of Menziés, Delthil, Pamard, Bouchard, and Teissier. Menziés has endeavored to show that diphtheria was caused by the dejections of birds, through the medium of water which has percolated through the deposits of dove-houses or poultry-yards into wells. In the epidemic which was reported by the author the atmosphere seems to have been the medium of propagation. He believed that the disease was carried to the island in which the epidemic occurred, and in which nothing of the kind had previously been known, by diseased turkeys. In the course of five months one hundred and twenty-five of a population of four thousand were attacked with diphtheria, and thirty-six of them died. This island was in the northern part of the Greek Archipelago, Skiatoes by name, and the epidemic continued during five months of the year 1884. The diseased turkeys showed false membranes of a gray color upon the velum of the palate and upon the pharynx. In one of them the process extended to the larynx; the membranes were not very closely adherent, and could be readily removed. The underlying mucous membrane bled but little, and the glands of the neck were not very much swollen. In one of those which recovered there was paralysis of the feet and the animal was unable to walk. The conclusions which were drawn from this epidemic were:

1. There is in turkeys a kind of diphtheria which resembles that which occurs in human beings in its symptoms, its evolution, and its gravity.

2. Its virus may be transmitted by the atmosphere to man, communicating the disease to him, and then developing into an epidemic.

A. F. C.

Ribbert: The Bacillus of Intestinal Diphtheria in Rabbits. (*Jahrb. f. K.*, xxvii. 4.)

The author observed in female rabbits, especially pregnant ones, a disease the most characteristic symptom of which was

an abundant cloudy peritoneal effusion containing flocculi of fibrin. In all the cases small nodules were found in the liver and spleen. On the swollen glands of the mesentery were small white patches. The wall of the intestine, especially the small intestine, was thickened in some of its parts, having on its inner surface a strong layer of gray and yellowish-gray necrotic material. The diseased segments of the intestine varied from very small dimensions to surfaces ten centimetres long. The changes were similar to those which are found in diphtheritic processes in the human intestine, and were due to colonies of micro-organisms in the form of short rods. A fissured fungus was readily cultivated from the different organs upon gelatine, potatoes, and agar-agar. The cultures showed small bacilli with round ends which divided into groups of two or more, and formed long threads either straight or curved. The following experiments were performed with pure cultures:

1. Injections were made into the veins of the ears of rabbits. The animals all died in about three days, and the liver and spleen showed changes which were exactly like those which were found in animals which had become diseased spontaneously.

2. Subcutaneous injections resulted in swelling of the lymphatics leading from the area of injection, upon the cut surfaces of which were the same small white patches which were previously described; there were also similar changes in the mesenteric glands, and similar colonies of fungi in the liver and spleen.

3. Injections into the peritoneum were not followed by peritonitis, but the same changes in the lymphatic glands, the liver, and spleen were repeated.

4. Injections into a freely-opened loop of intestine or into the mouth were followed by death in all cases, in two to fourteen days. In those in which the injections were made into the mouth there were swelling of the glands of the neck, with the same changes, on cross section, which have been described. The tonsils were enlarged and were permeated with colonies of fungi, but there were no extensive diphtheritic deposits. The experiments in the mouth were also modified by destroying the epithelium and then applying the cultures with a brush, resulting in the production of deep and extensive necroses which resembled those which are found in diphtheria in the human being. There was also swelling of the follicular apparatus of the tongue, which evidently furnished an avenue for the invasion of the system by the fungi. The greater number of the fungi were swallowed, and in many cases in which the animals lived four or five days the same evidences of disease were found in the small intestine which were pro-

duced by direct injection into the intestine; these were, first, redness of the mucous membrane, especially in the area of Peyer's plaques, and then œdematous swelling. The deposits increased in extent and intensity until the intestinal wall was quite infiltrated, the serous membrane and the mesenteric glands being finally involved. The microscope showed that these processes were due to the presence and entrance of the fungus into the intestinal wall. Similar changes were found in the liver and spleen, as when injections were made into the veins, but they were not so extensive. In the kidneys and lungs nodules of round cells, closely crowded together, were found with central accumulations of fungi. The changes in the lungs were especially noticeable after injections of an emulsion of the fungi were made into the trachea. The same experiments were equally successful with guinea-pigs. For reasons which will be obvious, after careful study of these experiments, the germ which has been described cannot be considered as one which would produce diphtheria in human beings. A. F. C.

Krüger: The Condition of the Fœtal Blood at the Time of Birth. (*Jahrb. f. K.*, xxvii. 4.)

The views which have been heretofore advanced upon this subject are as follows:

1. Coagulation of fœtal blood is incomplete.
2. Fœtal blood is poor in fibrin, compared with maternal blood.
3. The quantity of hæmoglobin in fœtal blood varies at different stages of development. At the end of pregnancy it is about the same as in the maternal blood, but it is always less than in the blood of the new-born infant a short time after birth.
4. The quantity of solid constituents in fœtal blood is greater than in the maternal.

Krüger's investigations showed that,—

1. The increase of solid constituents in fœtal blood as compared with that in the maternal blood is insignificant.
2. The quantity of fibrin in the fœtal blood is decidedly diminished at the moment of birth, and tends to diminish subsequently.
3. The quantity of hæmoglobin in fœtal blood at the moment of birth is about the same as in the maternal blood, but is never so great as in the new-born infant.
4. The sex of the fœtus has little or no influence upon the composition of the blood; the same is true with respect to the weight of the fœtus.
5. Fœtal blood coagulates at once at the moment of birth,



but the clot is a long time in forming, owing to the want of readiness with which the white corpuscles are broken up; and it is from these that the fibrin ferment is developed.

A. F. C.

Schwarz: Rachitis in the Newly Born. (*Jahrb. f. K.*, xxvii. 4.)

The author made an investigation upon five hundred new-born infants in the Second Vienna Obstetric Clinic, with reference to the presence of rachitis. The diagnosis was based upon the presence of craniotabes and swelling of the heads of the ribs, the cases being divided into five classes.

1. Those in which the ribs, from the fifth downward, were enlarged, and the skull softened, either in the vicinity of the sagittal suture or everywhere.

2. Those in which the ribs alone were diseased.

3. Those in which the skull alone was diseased.

4. Those in which there was enlargement at the borders of the costal cartilage.

5. Normal cases.

Of the five hundred cases, 37.6 per cent. belonged to the first class, 31.00 to the second, 7.2 to the third, 4.8 to the fourth,—that is, only 19.4 of the cases were free from more or fewer evidences of rachitic diseases. Investigation into the surroundings of the mothers showed that almost all of them lived under very unfavorable conditions. Of the premature children in this series, 93.3 per cent. of those who were born at the seventh month were rachitic, 81.00 of those at the eighth month, and 80.6 of those at the ninth. There were eleven deaths previous to the age of nine days, and careful examination and experiment in these cases confirmed the diagnosis which had been made during life. Microscopical examination showed great development of the proliferation and columnar-cell zones, and hyperæmia of the perichondrium. Prepared specimens showed great vascularity in the sub- and periosteal stratum, the newly-formed osteoid tissue deficient in lime, and the encroachment of the blood-spaces upon the bony tissue. The work of the author may be considered a confirmation of that of Kassowitz.

A. F. C.

Henoch: Kidney Affections during Childhood. (*Rev. Mens. des Mal. de l'Enf.* [from *Charité Annalen*, 1887, vol. xvii.], April, 1888.)

(1) A girl seven years of age was seized with fever of moderate intensity, followed by decided swelling in the left lumbar region, resulting from a chill and severe fatigue. The next symptoms were those of peri- or paranephritic abscess. The

abscess was opened and in five weeks the child appeared to be well. Then the fever returned and the urine showed albumen, pus, and blood, these phenomena lasting several days. The author's explanation is that after the perinephritic abscess was recovered from there remained in the pelvis of the kidney a purulent focus which suddenly emptied itself and was followed by cicatrization.

(2) The causes of acute nephritis in children are often obscure. In the majority of cases the kidneys are attacked subsequently to the development of an infectious disease, but acute nephritis may exist independently of such a history. Henoch has seen several cases which followed the absorption by the skin of such medicinal substances as balsam of Peru and carbolic acid. The disease may also occur in consequence of a sudden chill, or prolonged exposure to cold. This is seen in the frequent co-existence of nephritis with inflammatory diseases of the organs of respiration. In certain other cases of acute nephritis it is impossible to determine the cause. Such a case is cited, the patient being a boy ten years of age, who was convalescing from perityphlitis and was not exposed in any way to cold. In another case the precedent condition was a phlegmon of the arm.

(3) The plan of treatment should be the same whatever be the origin of the nephritis, and it must also be remembered that this disease tends to be recovered from spontaneously. There is no medicament which tends to prevent the development of the process, but spontaneous cure will be favored by keeping the patient in bed as long as the urine contains albumen, and by strict insistence upon a milk diet. This expectant method of treatment may be replaced by energetic medication only in cases in which extensive œdema is present. But even in such cases one must avoid using diuretics that are too irritating for the sake of obtaining an abundant flow of urine. Warm baths and sudorifics will be both more effective and more safe. The warm baths may be continued for several weeks unless there is a notable quantity of blood in the urine. They are not necessarily contra-indicated by complications in the shape of heart or lung disorders. Prolonged warm baths are much more apt to effect abundant perspiration than the use of pilocarpine or the wet pack. Henoch objects to venesection, tannin, perchloride of iron, and ergot in the treatment of acute nephritis, for the reason that if good results are not obtained by means of the harmless methods which have been recommended, it is because the extent and intensity of the disease are such that its development cannot be prevented.

Barr: Case of Serious Hemorrhage from the Cavity of the Tympanum in an Infant. (*British Medical Journal*, April 28, 1888.)

The following case is probably unique in respect of (1) the tender age of the patient (nine and a half months) and (2) the serious loss of blood. The baby had suffered from restlessness, sleeplessness, and severe pain for a week. Then a muco-purulent discharge appeared from the left ear, and there was relief. Two days after this there was lost, during the night, at least a cupful of blood. The bleeding occurred once or twice during the following day, but not to so great an extent. There was some bleeding again on the second day. After this time there was no return of the bleeding. The case was treated with acetate of lead solution and the ear plugged with iodoform on cotton.

Gallic acid, perchloride of mercury, and tincture of iodine were given internally. In regard to the explanation of the hemorrhage in such a case as this, it has been argued that the dilated and engorged arterioles in the tympanic mucous membrane give way under the influence of the partial or complete vacuum produced in the tympanic cavity from the closure of the Eustachian tube.

In this case, however, there was probably perforation of the tympanic membrane two days previous to the hemorrhage. But since otitis media occurs so frequently without hemorrhage, it is probable that in a case attended with hemorrhage there is some peculiar weakness of the walls of the vessels of the middle ear. It is supposed that in this child there was a hemorrhagic tendency which predisposed to the hemorrhage.

Idiopathic Nephritis in Children. (*British Medical Journal*, May 5, 1888.)

Dr. Stephen Mircoli states, in the *Centralblatt für d. Med. Wissenschaften*, No. 40, 1887, that between August and September, 1885, he observed fourteen cases of primary nephritis among children between the ages of three and ten years, in a town of three thousand inhabitants. The illness began with high fever, which disappeared at the end of the third or fourth day; then very firm œdema developed. Convalescence began in the majority of cases at the end of the second week. Three children died. In the kidneys from one of these fatal cases Dr. Mircoli discovered the appearances seen in acute diffuse nephritis, and also numerous little specks, which when strongly magnified appeared of an elongated oval form, and consisted of collections of germs resembling groups of pneumococci.

The germs were arranged either in balls or chains, and were



most abundant in the outer part of the cortex, then in the glomeruli, and most sparingly in the tubuli themselves. The germs had caused the formation of thrombi in the vessels of the cortical and medullary part of the kidney, causing either obliteration of the lumen or dilatation of the vessel.

Dr. Mircoli could not explain the nature of the micro-organisms, and he most rightly took care to note in his report of these cases that he could find no germs in the kidneys of the two other fatal cases. At the time of this epidemic of nephritis in children none of the zymotic diseases which most frequently cause inflammation of the kidney were prevailing in the same district.

Féréol: Diphtheria of a Grave Variety with Rapid and Unusual Progress. (*Le Concours Méd.*, May 26, 1888.)

The author was consulted by a woman of fifty years of age, who was taken with chills and malaise early in the evening, but showed only slight redness of the right anterior pillar of the fauces, and a small grayish patch upon the tonsil, which was not swollen. The next day the patient was aphonic, there was slight glandular swelling, and high fever. There was also great pain at the base of the neck, and the laryngoscope revealed a false membrane in the larynx. Carbolic acid spray was used, and a gargle of chlorate of potash. The next day the breathing was difficult, there was cough, sibilant râles were heard in the bronchi, a bronchial *souffle*, but no tubal *souffle*. There was retro-sternal pain, glycosuria, no albuminuria, and extreme depression. The next day there was no longer pain behind the sternum, but there were painful points at the level of the base of the thorax, and death occurred on that day. The disease in this case was propagated from the tonsil to the larynx, thence to the trachea and the bronchi, without involvement of the parenchyma of the lungs. The great rapidity of its progress was favored by the glycosuria, which must have been present prior to the existence of the diphtheria.

In another case a man's eye was enucleated, the operation being followed by a mild tonsillitis, and this by a broncho-pneumonia associated with diphtheria of the larynx and bronchi, which was fatal on the sixth day. Another case was that of a young girl who had pseudo-membranous angina with laryngeal and broncho-pulmonary complications, which was quickly fatal, though no false membrane was at any time expectorated.

Cadet de Gassicourt, in commenting upon these cases, knew of no sign which enabled one to diagnosticate the pseudo-membranous nature of bronchitis in the absence of expectora-

tion of false membrane. He had seen a case in which the progress of the disease had been ascending in the sense that after a benign diphtheritic angina a broncho-pneumonia of the left lung had followed. Subsequently croup was developed, false membranes being ejected from the nose. A. F. C.

Chantemesse and Vidal: The Microbe of Epidemic Dysentery. (*Le Concours Méd.*, April 28, 1888.)

The pathogenic microbe of dysentery has often been sought in the bodies of those who have died from the disease. Ziegler and Pryor have seen in necrosed portions of the intestinal mucous membrane great quantities of micrococci. Babes has stained bacilli, diplococci, and spirilla. Koch found in the dysenteric stools of patients in Egypt great numbers of monads. Heubner has seen what he considered a characteristic bacillus. None of these experimenters have been able, by means of cultures, to transmit dysentery to animals, and thus establish the proof of the specific character of a given microbe.

Five cases of dysentery were investigated by the authors, the disease having been contracted in warm countries. One case was that of a soldier who had contracted the disease in Tonquin. A microbe was found in the faecal matter during life, and, post-mortem, in the walls of the large intestine, the mesenteric glands, and the spleen, which was similar to that found in the stools in four other cases in which the disease had been contracted in Senegal and Cayenne. The authors have never found this microbe in the stools of a healthy person, and it has morphological and pathogenic qualities which compel them to consider it specific in character. Sections of the intestine showed considerable thickening of the mucous membrane and cellular tissue. The glands were increased in volume at certain points, and showed evidences of catarrh. At other points there were abrasions. Between the glandular tubes there was proliferation of the connective-tissue cells. The surface of the mucous membrane was covered with multitudes of microbes in the form of rods. In the glandular *culs-de-sac* between the tubes microbial vegetations were also abundant. The cellular membrane much thickened and inflamed, and infiltrated with an abundance of pale, fine bacilli; from this membrane, the glands, and the spleen material for pure cultures was obtained. The microbe developed rapidly upon gelatin at ordinary temperatures, had the rod form with rounded ends, and its transverse diameter increased after successive cultures. It also developed on bouillon and potato, the latter culture being dry and yellowish. It was poorly colored with aniline dyes. It did not liquefy gelatin, and at the surface a white

pellicle formed, which did not extend to the walls of the vessel. Isolated colonies upon plaques of gelatin, when scarcely visible to the naked eye, show, with slight magnifying power, the appearance of a well-defined spot. A little later they have a yellowish appearance, and present the figure of two concentric circles, the outer one being the most distinct. At a later period they have a whitish granular appearance. Their diameter never exceeds that of a lentil. No spores have been observed at any time in their development. Experiments were made upon guinea-pigs with pure cultures by injection into the mouth, into the intestine, and into the peritoneal cavity. Of these, the first class showed no bad effects for several days. If killed at the end of eight days one would find ulcerations upon the stomach as large as a small lentil. The first part of the large intestine contained liquid material in which microbes were found. The diameter of the gut was increased, its walls were thickened and ecchymotic, and the closed follicles were atrophied. In cases in which the stomach had been alkalinized before performing the experiment, these lesions were the more prominent upon the gastric mucous membrane, appearing in the form of large ulcerated plaques with irregular contour, and covered with whitish, soft, false membrane. In cases in which intra-peritoneal injection was made, the animals died in two or three days with peritonitis, pericarditis, and fibrinous pleurisy. Bacteriological examination showed the microbes in pure culture in the false membranes and the blood. Intra-intestinal inoculation after laparotomy gave very significant results. In the animals which were killed at the end of eight days the first part of the large intestine was thickened, and the intestinal cavity filled with diarrhoeal fluid which contained the microbe. The mucous membrane was swollen, ecchymotic, ulcerated, the closed follicles were hypertrophied, and so were the mesenteric glands. The lesions were disseminated in foci which were separated from each other, the diseased regions showing intense catarrh of the intestinal glands. Between the glandular tubes one could see many bacilli penetrating the intestinal coats and forming foci between the mucous membrane and cellular tissue. The foci varied in form, and were abundant in the closed follicles. Pure cultures of the bacilli injected eight days previously were obtained from these regions. The liver showed two or three foci of a yellowish appearance. Sections of the liver colored with methylene blue and solution of ammonia showed coagulation necrosis at the centre of the portal spaces, and in the adjacent capillaries were bacilli resembling those which had been injected. The presence of this bacillus in the stools and viscera of dysenteric patients, its absence from the



stools of the healthy individual, and the lesions which it seemed to cause in the organs of the guinea-pig are all arguments in favor of its specific character.

A. F. C.

**Peyraud: Pathogenesis and Treatment of Hydrophobia.** (*Jour. de Méd.*, May 6, 1888.)

The object of the author's paper is to show the inutility, at first, of curative measures, and the necessity of attending to the bitten part. He has heretofore called attention to pseudo-hydrophobia (simili-rage), which he has shown to be non-virulent, its relation to true hydrophobia, the prevention of both by the use of chloral, and antirabic vaccination before and after inoculation with essence of tansy, and he was led by a knowledge of the foregoing to the discovery of a dosable chemical vaccine, and the vaccinal leucomaines. His experiments were performed upon more than two hundred rabbits, and he asserts that he has been able to isolate the poison of rabies, which has an odor like the essence of tansy. He believed it would be necessary to go to the centres of fermentation and isolate the animal leucomaines, purify them of their microbes, and use them to produce immunity to the poison by habituating one to it. Though this immunity might be temporary, it would always be useful in time of epidemics. Another means of prevention still more efficient than vaccinations is the treatment of the bite,—that is, the point of inoculation. As to the pathogenesis of the disease, the author believes with Dubové that the virus is propagated by the nerves to the medulla, rather than by the blood, the divided nerves of the wound first permitting the rabic ferments to be fixed upon them. The fermentescible substance is probably supplied by the chemical elements of the nerve-tissues. Fermentation may go on very slowly, and the organism be unconscious that anything but health exists. By degrees the larger nerves and nerve-centres are reached, thus corresponding to the long period of incubation of the disease which is usually observed. When the bulbo-cerebro-medullary mass is reached all the elements which are necessary for the proliferation and construction of the rabic poison are at hand, and the nervous substance then becomes inoculable, as has been shown by Ferré and the author. There is at such a time a concealed or latent hydrophobia, which manifests itself only by the virulence of the substance of the bulb. Next, under the influence of an abundance of the fermentescible substance the product of fermentation becomes exaggerated *pari passu* with the ferment itself. Then come the respiratory phenomena which the author calls respiratory hydrophobia.

Still, the organism reacts and the poison is eliminated to such an extent that the functions are not materially impaired. The poison increases, and all at once the eliminative functions fail to preserve the system's equilibrium, the functions of the bulb are altered more and more, intoxication increases, and death finally comes. It would thus seem that when hydrophobia declares itself it is incurable, and the author has been treating it with essence of tansy, chloral in large doses, antipyrin, salicylate of soda, carbolic acid, and alcohol. None of these means have been successful, and he proposes to try pilocarpin and carbonic acid, but without much hope of success. Theoretically the correct means of treatment would be an eliminator of the rabic poison, one which would be able to fix a very volatile substance, and such a substance is at present unknown. Cure being at present impossible, the expedient which would seem most desirable as a substitute is prevention. This has been the object of Pasteur's efforts and also of the author's, the latter having been begun in 1872. It is self-evident that preventive measures must be undertaken as soon as possible after the bite is received, before the rabic ferment has made much headway, and it will be necessary to use the full dose in vaccination and at the same time to avoid a dose which would cause perturbation, since perturbations always favor the development of the disease. It is not possible to say what the rabic ferment is. If it is a microbe it is probably killed by the poison which it helps to form. Whether certain germs develop from its body after death it is also impossible to say. The preventive methods are the only ones which have had any serious action thus far, and the most efficient of them is that which treats the bite, and which may be called the antiseptic method, since it consists in the thorough cauterization of the wound, and washing it with various antiseptic fluids. If the actual cantery is used, it should be used at a red heat and be made to burn deeply. The potential caustics—Vienna paste, for example—are probably more effective, since they burn more slowly and more deeply. The author thinks that the galvano-cautery will, perhaps, furnish a means of treatment which will be more radical in its destruction of nerve-tissue than any of the others, and so offer better prospects of a radical cure. As to the author's experiments, he diluted hydrophobic marrow with a crystal of chloral and added a little sterilized water, obtaining an emulsion which looked like the white of an egg beaten up. This was introduced under the conjunctiva, and hydrophobia was never produced after its use. The same operation was performed with pure essence of tansy, the same result being obtained. An alcoholic solution of carbolic acid,

or a ninety-per-cent. solution of alcohol, were similarly successful. From the foregoing it would appear that the virulence of the poison of rabies is overcome by certain antiseptic agents, but those antiseptics must be chosen which disorganize the nervous tissue most profoundly, and they should be injected into the wound or its vicinity within three hours after the injury has been received.

A. F. C.

Le Gendre: *Etiological Diagnosis and Treatment of Nocturnal Incontinence of Urine.* (*Le Concours Méd.*, May 26, 1888.)

Two cases of this condition were recently seen in which the cause differed. In one, a boy of seven, an examination of the genital and abdominal organs and the nervous system did not reveal the cause. Further inquiry showed that the child had suffered with intense thirst accompanied with dyspeptic symptoms in the evening, and the parents had been in the habit of giving him one or two glasses of sweetened water or tea to relieve them. Cessation of this practice was followed by relief of the incontinence. The other case was that of a boy, four years of age, in whom a phimosis with fissure was found. Circumcision gave the desired relief.

Picard in speaking of this condition refers to the fact that the tonicity of the smooth muscular fibres of the sphincter of the bladder and of the orbicular muscle of the urethra is sufficient under ordinary conditions for the retention of the urine. If the desire to urinate becomes accentuated and there is an inclination to resist it, the contraction of the voluntary muscles of Guthrie and Wilson at the deep portion of the urethra assists the action of the involuntary ones. If the equilibrium between the two forces is disturbed, the urethral force which retains the urine becoming too weak, or the vesical force which expels it too strong, there is incontinence. In children under eighteen months of age this equilibrium does not exist; the contractility of the bladder is very energetic while that of the urethro-vesical sphincters is absent, and the will is not yet trained to exercise contraction of the voluntary muscles. Incontinence in early childhood is, therefore, normal, and control is not exercised until the second or third year of life. In seeking for a cause of incontinence the penis should be carefully examined for evidences of phimosis and posthitis and the vulva for vulvitis. The region of the bladder should also be percussed and the child should be made to urinate in one's presence, the urine being examined as to its reaction and density. The possibility of diabetes or chronic nephritis would also suggest an examination for sugar and albumen, for



these diseases are first manifested by nocturnal incontinence of urine. The possibility of oxyuri in the rectum must be considered, and it may be necessary to examine the bladder for cystitis or lithiasis, or the urethra for stricture or other evidence of inflammation. Incontinence may also be caused by constipation with pain and hemorrhage in defecation, or by anal fissure. The condition of the brain and spinal cord should also be carefully investigated. The two principal drugs which are used for incontinence are belladonna, if there is exaggerated contractility of the bladder, and nux vomica, if there is weakness of the peri-urethral muscles. The belladonna treatment, which was inaugurated by Trousseau, and is often very successful, produces a diminution of sensibility, feebleness of motion, muscular relaxation, and diminution of the rate with which the urine is secreted. In some cases belladonna cannot be tolerated, and bromide of potassium may be substituted with advantage, to be given in syrup or in powder, and in quantity according to circumstances.

Nux vomica is advised, in the form of strychnine, for those cases in which it is desired to increase the reflex actions. As these become more active the motion or contractions resulting from them become more energetic. The dangers from overdosage with this powerful drug, or from peculiarity on the part of the patient, must always be remembered. It is much safer to use ergot, which, like strychnine, contracts muscular fibre. In those cases in which there is increase of vesical contractility combined with weakness of the urethral muscles, strychnine or ergot may be combined with belladonna. The most efficient of all treatment for insufficiency of the urethral muscles is the induced electrical current. As tonics the peptonate of iron is advised, also sea-baths for lymphatic or scrofulous children, and sulphur-baths for the nervous. If incontinence results from inflammation of the bladder, a few drops of a 1 to 200 or 1 to 500 solution of nitrate of silver may be injected into the organ. The diet and habits of the child must also be carefully regulated, and in certain cases judicious punishment must be inflicted. In addition to the remedies mentioned, and a great many others which have been suggested from time to time, a recent therapeutical contribution for this disease is the *Rhus aromaticus*, from the bark of which a tincture is prepared which has been very successfully used in doses of twenty to fifty drops daily. This drug is astringent in its action, and, though not yet fully understood, it is supposed to have a powerful tonic effect, like nux vomica, with an apparently elective action upon the bladder.

Widmark: The Frequency of Ophthalmia of the New-Born in Sweden. (*Rev. Gén. d'Ophthal.*, April 30, 1888.)

In the Swedish maternities there were born in 1885 2793 viable children, of whom 15 had ophthalmia of the new-born. Five of the maternities practised Créde's method, one did not. In 1886 there were born in the three maternities of Stockholm 2326 children, of whom 14 had ophthalmia; and in the first half of 1887, in the same maternities, 1197 children were born, of whom 3 had ophthalmia. Créde's method was carried out in all cases. In 1884, with different methods of preventive treatment, of 2259 children who were born in the maternities of Stockholm and Gothenburg, there were 31 cases of purulent conjunctivitis. In 1885, when Créde's method was adopted in two of the maternities, the percentage of the disease among 553 children in one of them was 0.53, in the other, among 600 children, it was *nil*. In the Stockholm maternities, between the years 1824 and 1840 the percentage was 5.5, between the years 1870 and 1876 it was 4.21. During this period the infectious character of the disease began to be realized, and the prophylactic measures which were suggested account for the diminished frequency of the disease. Between the years 1877 and 1881 the percentage was 1.88, antiseptic measures being then in vogue. During the period from 1870 to 1877 the mortality among the parturient women in the maternities diminished from 4.7 to 0.53. In 1882, when direct ocular disinfection with one-per-cent. solutions of carbolic acid began to be practised, the percentage of cases of conjunctivitis was 0.93; in 1884, with sublimate applications, it was 0.48; in 1885 to 1887, with Créde's method, it was 0.096. Similar favorable results followed the adoption of Créde's method in the Swedish polyclinics for diseases of the eyes. The same method was adopted quite generally and with equally good results in the practice of Swedish midwives. A. F. C.

Huchard: Pulmonary Congestion with Heart-Failure in the Eruptive Stage of Measles; Treatment by Hypodermic Injections of Caffeine. (*Rev. Mens. des Mal. de l'Enf.*, June, 1888.)

Phenomena indicative of heart- and lung-trouble are of frequent occurrence during the progress of measles or in the course of convalescence from it. There is also another accident, of rare occurrence, which may appear at the very beginning of the eruptive period, which deserves special attention on account of the suddenness of its appearance and its apparently grave symptoms,—namely, an intense general pulmonary hyperæmia, which is sometimes accompanied with symptoms of asphyxia and

acute dilatation of the right heart. Two cases of this kind are narrated by the author. The treatment consisted of dry cups twice daily, fifteen centigrammes each of Dover's powder and powdered squills three times daily, a suitable quantity of alcohol, sinapisms to the lower extremities, and three or four hypodermic injections of caffeine of twenty-five centigrammes each.

The cause of the pulmonary congestion in the author's cases could not be definitely determined, though both of them had arthritic histories which might be considered a predisposing cause to congestion.

The caffeine, which formed a portion of the treatment, is highly recommended on account of its threefold properties as a general tonic, a cardiac tonic, and a diuretic. It is better than ether, which has only an exciting action. It has also been used with good effect in the adynamic and cardio-vascular forms of typhoid fever. The following formula has been found effective:

R Caffeine, 2 grammes;  
Sodæ benzoat., 3 grammes;  
Aq. destil., 6 grammes.

Make a hot solution, and use a sufficient quantity.

A. F. C.

Samelsohn: Blindness in Children resulting from Inflammation of the Eyes with Blepharospasm. (*Rev. Gén. d'Ophthal.*, April 30, 1888.)

The author has confirmed the observations of De Graefe, Schirmer, and Leber, having seen cases in which small children became completely blind after suffering a long time from violent blepharospasm resulting from scrofulous affections of the cornea and conjunctiva. The blindness, in these cases, came on after the blepharospasm had been cured. Such blindness may be permanent or it may be recovered from. Temporary amaurosis is considered as a central inhibition of the psychical visual act. The vision is suppressed by the persistent occlusion of the eyes, active suppression being established only in children. Incurable amaurosis is produced by an ordinary or a glaucomatous atrophy of the optic papilla, and depends upon the mechanical action of the pressure exercised by the spasm of the lids upon the globe of the eye.

A. F. C.

Alexander: Blindness following Whooping-Cough. (*Rev. Gén. d'Ophthal.*, April 30, 1888.)

The author observed a case in which blindness suddenly came on after whooping-cough. The reaction of the pupil and the ophthalmoscopic image were normal. It was supposed that cerebral oedema existed between the corpora quad-



rigemina and the occipital region. This œdema did not disappear, but, on the contrary, increased to such a degree that it produced the most grave phenomena of cerebral compression and death. In another case of blindness after whooping-cough the author discovered an optic neuritis with immobility of the pupils. In this case there was descending neuritis resulting from meningitis. When the disease was cured the vision returned, in part, but then it became evident that there was atrophy of the optic nerve.

A. F. C.

Moncorvo: Elephantiasis Arabum in Children. (*Arch. di Patol. Inf.*, March, 1888.)

The object of the author is to refer more particularly to this disease as it occurs in the early years of life. Contributions to this subject have been abundant, but the cases have usually been observed when they were more or less advanced in their evolution, and applied to individuals who had passed the age of puberty. They have also been observed either on account of the considerable development of tissue which was demonstrated, or on account of the extension of the lesion. It would seem also that the period of the invasion of the disease had not been thoroughly studied, nor the attention fixed upon the characters and the seat of it.

Godard, who studied the disease in Egypt and Palestine, questions its existence previous to adult life, and states that not a single case has been observed among children. Mohammed Aly Bey thinks it does not usually develop until after the age of fifteen in males and twelve in females, though it has rarely been observed at the ages of eight, ten, and twelve. The most favorable period for its development is believed to be between the ages of fifteen and twenty. Hebra believed it was rare before puberty, and Duchassaing believed that it never developed before the age of eight or ten. A very few observers have reported cases occurring early in life, Guéniot having seen one at the age of two years, Labbé one at the age of thirteen months, and several observers one each at the age of nine years. The author's experience includes more than two hundred cases, and he is able to confirm the reports that it does occur in very young persons. In forty-five of the author's cases twenty-eight occurred among children, the other seventeen were in adults, who gave a clear history of the disease from their infancy. The ages of the twenty-eight patients were between the limits of fifteen days and fourteen years. In the remaining seventeen cases the disease became apparent between the ages of two and twelve years. Congenital elephantiasis has been described by a few authors, but the details

which they have given would seem to indicate that the children were suffering from œdema neonatorum, a condition which has been described by Andry and Underwood and by Parrot, and differs essentially from elephantiasis. Virchow has described a form of elephantiasis in which the tissues are soft in consistency, but this is a form of unusual rarity, and may be congenital. An example of mixed congenital elephantiasis has been seen by the author in which cystic and sclerotic elements were combined. The conclusions of the author are:

1. Elephantiasis Arabum may develop during intra-uterine life.

2. The disease may occur during any period of childhood, contrary to the teachings which have generally been advanced upon this subject.

A. F. C.

Zechmeister: Pemphigus Neonatorum. (*Rev. Mens. des Mal. de l'Enf.*, June, 1888.)

An extensive epidemic of pemphigus neonatorum has recently come under the author's observation. The infecting agent of the disease existed in the person of a midwife, who carried the disease to twenty-eight children in the course of a midwifery practice of seventy-six cases. In most of the cases the disease showed itself upon the children in the course of the second week after birth. When the eruption had become more or less confluent the temperature arose to  $40.1^{\circ}$ , and at the same time there was loss of appetite, restlessness, and insomnia. In a short time there was great loss of strength, emaciation, and, in the worst cases, death between the sixth and the tenth days. Six cases resulted in this way. The treatment was limited to scrupulous cleanliness, with the application of dressings of iodoformed or salicylated cotton.

A. F. C.

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### III.—SURGERY.

Cardone: Congenital Anomalies of the Auditory Apparatus. (*Jahrb. f. K.*, xxvii. 4.)

The muscular portion of the ear may be unduly long or short, or it may be abnormally situated. It may be abnormally small or entirely wanting. A case of the latter variety is narrated. The external auditory canal is sometimes abnormally long, or there may be a fistulous tract which suggests the existence of a double canal. The canal may be very narrow, of circular form, or a mere fissure. If the canal is entirely closed, operative procedures will usually be fruitless, as defects of the internal ear are usually present also.

The drum membrane may be abnormally inclined, it may be perforated in its anterior superior portion, or it may be rudimentary or altogether absent.

In the tympanic cavity the ossicles, the fenestra, or the walls may show a variety of anomalies which will prevent the possibility of hearing. The Eustachian tube may be too wide, too narrow, or entirely obliterated, the mastoid process may be absent. With grave defects of the tympanic cavity are usually associated deformities of the lower jaw, of the soft and hard palate, the base of the cranium, etc. Hearing is possible with some of these severe lesions, but it is usually entirely wanting. The causes of these deformities usually consist in defective development, but why they should exist has not yet been explained. As a rule, nothing can be done to remedy these anomalies, save in a few cases in which the external ear alone is implicated.

A. F. C.

Heilly: Tubage of the Larynx in Croup. (*Le Concours Méd.*, May 5, 1888.)

After tracing the history of this operation, its description by Bouclut in 1858, the opposition which it received at the hands of Trousseau, its subsequent abandonment, and its rediscovery in 1880 by O'Dwyer, the author stated that of the two thousand five hundred and nineteen reported cases in which it had been performed in America success had attended twenty-six per cent., which was slightly better than the results from tracheotomy. The author had used O'Dwyer's apparatus in thirteen cases of croup, such cases as were usually tracheotomized, the symptoms being dyspnoea, supra- and substernal retraction, and commencing asphyxia. The youngest patient was nineteen months of age and the oldest four years. Two were in such a condition that they must have succumbed under any form of treatment. Of the other eleven, there had been cures in two cases, the ages being two and two and one-half years. The tube was retained six days in one and seven in the other. The advantages which the author recognizes in tubage are that it can be readily accomplished, and without loss of blood; it is also free from the unforeseen dangers which sometimes attend tracheotomy, even in the most skilful hands.

He found that the canula was readily tolerated, that it gave immediate relief, and the temperature of the air inspired was not lowered, as is the case after tracheotomy. The disadvantages experienced were the frequent obstructions of the tube by false membrane, and the interference with deglutition, especially when fluids were taken, and this is about the only form in which food can be taken without repugnance during croup.



The author believed that broncho-pneumonia from the introduction of particles of food into the air-passages was of frequent occurrence. The best way to nourish those who have been subjected to tubage is by means of a rubber tube passed into the œsophagus through the nose, and this should be done from the beginning. The operation would appear to be indicated :

1. In all very young children, who bear tracheotomy badly, and with whom the loss of even a few drops of blood is significant.

2. In mild cases of croup which apparently remain such, and in which tracheotomy is an operation which is proportionally very grave.

3. In cases of toxic diphtheria in which the patient has lost all power of resistance, and would be unable to bear the shock of tracheotomy.

4. In croup which follows measles, which is never successfully treated by tracheotomy.

5. In a general way in all cases in which tracheotomy is impossible or very dangerous.

It may be, also, that tubage can be further improved, while tracheotomy remains the same as it was in the days of Bretonneau and Trousseau.

A. F. C.

Allen : Four Successful Cases of Litholapaxy in Boys. (*Medical News*, September 1, 1888.)

CASE I. Aged thirteen and a half years. Phosphatic stone. Weight eighty grains. Largest diameter one inch.

CASE II. Aged fifteen years. Uric acid stone. Weight thirty-two grains. Largest diameter one inch.

CASE III. Aged thirteen years. Stone, urates, and phosphates. Weight one hundred and forty-five grains. Largest diameter one and one-quarter inches.

CASE IV. Aged nineteen years. Weight one hundred and eighty grains. Largest diameter one and one-quarter inches.

The difficulty attending this operation in boys has arisen from the small calibre of the urethra, the interference being not so much to the entrance of instruments as to the exit of the fragments. In the three first cases above the instruments used were of the calibre No. 18 French ; in Case IV. those suited to adults were used. At the beginning of the operation, and in crushing the larger fragments, the lithotrite used was of the regulation type, with the fenestrated female blade ; but the operation was completed with a special lithotrite, having a flat, unfenestrated female blade, to crush those fragments too large for the tube, and yet so small as to pass through the fenestrum of the ordinary lithotrite. It is the use of this

instrument that makes the operation a success, as it permits of a smaller tube for the washing-bottle.

In the cases reported, the crushing of the entire stone and the washing out of all the fragments was completed at the one sitting. No unfavorable symptoms occurred, and each patient made a rapid and speedy recovery, being up and around in from one to two days.

The author claims for this operation, as compared with lithotomy, that it is perfectly safe in skilled hands, is less severe, the care of the patient is vastly less, and the recovery much quicker, and he believes the cure to be as permanent.

**Silcock:** Strangulated Cæcal Hernia in a Child; Radical Cure by Twisting the Neck of the Sac. (*British Medical Journal*, February 11, 1888.)

Medical literature shows that recorded cases of cæcal hernia are very rare in children, and that they have always been of the congenital variety. The paper gives at some length the history of the case of an infant having a scrotal hernia which rather suddenly became irreducible. Herniotomy was decided upon; and with a view of producing a radical cure the sac was dissected up from its attachments, divided circumferentially above the testis, and its neck twisted by the fingers. A catgut ligature was tied around the twisted pedicle just inside the external ring, and the sac cut away just below the ligature. The child made a good recovery. The radical cure obtained in this case confirms the method which advocates the use of torsion forceps as a means of twisting the sac; but the same result was easily obtained in this case by the fingers alone.

**Owen, Edmund:** Lumbar Hernia; Radical Operation; Recovery. (*British Medical Journal*, May 5, 1888.)

A child, five and a half years old, after an injury complained of pain in the small of the back and right foot. A few months afterwards an abscess broke above the left hip. This finally healed, and several weeks afterwards a painless lump appeared at the site of the original abscess. The lump was situated just above the left iliac crest, in the triangle of Petit. The back was stiff and the lumbar spines prominent. The tumor was resonant on percussion, and could be easily reduced. A cough or strain would at once reproduce the tumor.

*Operation.*—An incision was made over the tumor, its contents reduced without examination, and the edges of the latissimi dorsi and external oblique approximated by sutures. The child made an uninterrupted and perfect recovery.

A chronic abscess in the situation referred to is of common

occurrence, so that, when a surgeon sees a soft, rounded tumor above the back of the iliac crest, and notices at the same time that there is a stiffness or a curvature of the spine, he is apt to conclude that the tumor is an abscess. Should the tumor be incised in mistake for an abscess, however, the result might be disastrous.

Cheyne, Watson: Treatment of Spinal Abscess. (*British Medical Journal*, May 19, 1888.)

The author states that in these abscesses we have to consider the contents, the wall, and the lesion of the bone from which they start, although the bone-lesion cannot always be made out.

When the osseous lesion approaches the surface it leads to the formation of a nodule, which constantly extends by infiltration of the surrounding tissue, while the tubercles in the centre of the mass tend to undergo cessation. This finally results in a chronic abscess. The growing part of the abscess is thus the wall, and the contents are broken-down portions of the wall. The bad results following the opening of these abscesses, where putrefaction is not prevented, is readily understood from their pathology.

The methods of treatment considered were two in number,—those which lead to the cure of the abscess without opening it, and those in which the abscess was opened.

In regard to injecting the abscess with iodoform mixed with glycerin or with iodoform dissolved in ether, the conclusion reached was that it would be well to try this method in all suitable cases before proceeding to open the abscess.

As to the question when these abscesses should be opened, the conclusion reached was that they ought to be treated as soon as possible, for the chances of absorption were very slight, and if absorption did not occur the abscess became larger.

As to the position of opening, the most important point was to have it as far removed from the source of contamination as possible. An important question was what should be done with the abscess wall. The author urged that in subcutaneous and small chronic abscesses they should be dissected out as if they were cysts; but in these spinal abscesses this was rarely possible, and even scraping the wall thoroughly was dangerous on account of the important structures in the vicinity.

Nevertheless, as much of the abscess wall as possible should be removed; and the author has found great advantage in touching the portion remaining with undiluted carbolic acid.

The removal of the diseased bone is seldom feasible except in the neck, where the possibility of doing good must be borne



in mind. The author objects strongly to imperfect antiseptic treatment; and especially to the attempts to remedy the mischief so arising by injecting irritating antiseptic solutions.

In conclusion, stress is laid on the fact that the patient is also suffering from disease of the spine, which must not be neglected. As a rule, it is best to keep the patient in a recumbent position with an apparatus to prevent lateral movement, and to remind him that he must not sit up.

Parker, R. W.: Two Fatal Cases of Acute Intussusception occurring in Infants. (*British Medical Journal*, June 2, 1888.)

The particulars of two cases were related. The speaker drew attention to the uncertain onset, and the absence of symptoms indicative of acute strangulation. The pain was not excessive; vomiting occurred only during the first twelve hours; there was but little blood-stained mucus discharged from the rectum; there was no tenesmus. The author argued that the absence or slight prominence of the classical symptoms was a bad, rather than a good, sign. Thus, if the gut were strangulated, it would become gangrenous, and therefore painless.

The difficulty of satisfactorily treating such cases was dwelt on.

The danger of injecting water, except in an early stage, was brought out by the author. A case was reported by Mr. Harrison Cripps in which death resulted from rupture of the intestine following an injection. Another case showed what nature would sometimes do if left alone. The child had symptoms of obstruction for a fortnight. These subsided, and there soon appeared at the anus a portion of sloughing intestine. This was removed, and each day for a month more appeared and was cut away. The child recovered, but died several months afterwards from scarlet fever. The autopsy showed that the small intestine was directly attached to the anus. There was no trace of ascending, transverse, or descending colon, nor rectum, which must have come away as a slough.

Mr. Cripps advised injection early in these cases; but later he recommended Nélaton's operation,—the opening of the most prominent coil of intestines through the abdominal wall. Nature might then remove the invagination and leave the intestine patulous.

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#### Dewees's Mixture—A Correction.

Dr. Baruch states that the amount of Spts. Ammon. Arom. in Dewees's mixture should be  $\mathfrak{zss}$ , instead of  $\mathfrak{zss}$ , as given in the formula on page 539.

# THE ARCHIVES OF PEDIATRICS.

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## Original Communications.

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### THERAPEUTICS OF INFANCY AND CHILDHOOD.

BY A. JACOBI, M.D.,

President of the New York Academy of Medicine, Clinical Professor of the Diseases of Children in the College of Physicians and Surgeons, New York, etc.

(Continued from October Number.)

#### IV.—CONSTITUTIONAL DISORDERS.

##### 5. *Syphilis.*

THE nutrition of an infant suffering from hereditary syphilis is attended with great difficulties. Many of the mothers who contracted syphilis either before conception or during gestation are anæmic in addition to their constitutional ailment; thus their milk is liable to be both incompetent and dangerous. The former class, however, is not very numerous, for women syphilitic before conception are apt to miscarry and have no living children. The latter class (those who contracted syphilis during their pregnancy) is not quite frequent, fortunately; but still the question will come up now and then whether the baby of a woman who acquired syphilis in the course of her pregnancy should be nursed by her or no. The theoretical answer to this question has been this, that the baby may be permitted to nurse if it have been infected already, but must not be put to the breast if still healthy. That answer is no answer; for in most cases of such acquired syphilis, and

even in most of those of hereditary syphilis (derived from a father syphilitic before conception), the first symptoms of the disease in the infant are visible after some, or many, weeks only. Thus, nobody knows whether the newly-born is infected or not. If such a baby be puny, feeble, and in poor general health, nobody would have the courage to deprive it of its mother's milk. Artificial feeding would be a death-warrant. Thus, such a baby ought to be nursed by its mother, and, if exceptions be permissible in favor of the puny, and the puny be expected to thrive on its mother's milk, the vigorous baby's chance will be the better. Therefore I certainly advocate the baby's nursing at the breast of the mother who acquired syphilis during pregnancy, no matter whether the symptoms of the disease be visible in the baby or not. Meanwhile, both mother and baby must be subjected to a thorough and prolonged anti-syphilitic treatment.

The same baby must not be put to the breast of a healthy wet-nurse, no matter whether symptoms have made their appearance in the baby or not; or whether the baby has been subjected to an antisymphilitic treatment or not. For the nurse must not be exposed under any circumstances, without at least having been made fully aware of the risk she is running.

The mother of a baby infected with hereditary syphilis is herself either syphilitic or not. If the latter, she is immune as regards her infant,—that is, she will not be infected by her nursing syphilitic infant. In both cases she must and may nurse. For if syphilitic herself, she will not render the case of her infant more serious; if not, she cannot transmit a disease she has not herself. In neither case can she be infected by the diseased infant. In either case, both mother and child must be treated.

In no case must a baby either syphilitic or suspected of syphilis be put to the breast of a healthy wet-nurse. Syphilis contracted through the infection of the nipple is liable to be as destructive as that which attacks physicians through their fingers. Such a wet-nurse must be forbidden to nurse altogether, or permitted only with a full knowledge of the circumstances, and directed, if she accept a place after all, to nurse through an artificial nipple. Meanwhile, the syphilitic or sus-



pected baby must undergo an antisyphilitic treatment. If only suspected, but for good reasons, the treatment must not be postponed until positive symptoms may have made their appearance. For mercurial treatment is a less grave interference in the young than in the old, and nothing can be more reprehensible than the opportunity given to constitutional syphilis to obtain full sway.

From what has been said of the many contraindications to the infant being brought up at the breast, it follows that artificial feeding must often be resorted to. This circumstance impairs the prognosis considerably, and claims the best knowledge and soundest judgment of the well-informed practitioner.

Preventive treatment is required both on the paternal and maternal side. Syphilitic endometritis leads mostly to miscarriage; when the embryo or foetus survives, the newly-born exhibits syphilis at once. Women infected during pregnancy may, or may not, infect the offspring, according to the time of their own primary and secondary symptoms. In all of these cases a thorough and protracted antisyphilitic treatment is required. For practical reasons, for women with habitual abortion, where the diagnosis cannot be positively made, I advise and practise mercurial treatment. Most cases of hereditary syphilis, however, are derived from the father. It is he who has to undergo a strict and effective treatment for the purpose of extinguishing the calamitous disorder.

The medicinal treatment of hereditary syphilis requires the several preparations of mercury, in many cases iodides also. Their indications, modes of administration, and doses depend, to a great extent, on the locality or organ affected, whether skin, mucous membrane, subcutaneous tissue, lymphatic glands, muscles, bones, the viscera of the thoracic or abdominal cavities, the nervous system, or the sensory organs; and on the time at which the first symptoms become perceptible. In the majority of cases this takes place between the fifth and eighth weeks of life. Then the nose, lips, and anus exhibit rhagades; these fissures are apt to be quite painful; the skin is getting covered with roseola, the palm of the hand and sole of the foot with efflorescences; the complexion becomes sallow without being uniformly so at all times, for indeed changes and a

certain degree of intermission are observed. After a while maculous, squamous, and papulous eruptions make their appearance, pustules and vesicles spring up and terminate in ulcerations, gummata appear in the skin. This form permits of a fair prognosis, particularly in the cases of infants reared at the breast. The treatment can be carried out slowly and systematically.

It consists in the internal administration of calomel; doses of from one-twentieth to one-sixth of a grain can safely be given three times a day, for months in succession. If in any case diarrhoea were to set in, and no fault be found in the food administered, or the condition of the digestive organs impaired by other causes, from a twentieth to a twelfth of a grain of Dover's powder may be added to each dose.

Other mercurial preparations have been recommended, the bichloride and the cyanide in doses of from a one-thousandth to a three-hundredth of a grain several times daily. As these pages, however, are being written for practical guidance, and not for the elaboration of the history of the therapeutics of infant syphilis, I can but advise the use of calomel as effective and sufficient. The use of the blue ointment has been eulogized under the impression that the internal administration of the drug might lead to digestive disorders; as inunctions made in the usual way were found to irritate the skin (oleates are objectionable for that reason alone), it was recommended to apply it to a sheet of soft leather surrounding the knee, and secure its slow embrocation by the spontaneous movements of the baby's extremities. Thus the treatment is left to a great extent to the patient, and the actual dose cannot, to say the least, be determined upon or even estimated. When the skin is badly affected, from ten to twenty-five grains of the bichloride of mercury may be added to the daily bath of the infant. This external treatment also can be continued for weeks.

A similar treatment is required in those cases in which an infant or child (in him in larger doses) has acquired syphilis in one of the many ways in which the disease can be contracted. The ritual sucking out of the circumcised prepuce has given rise to syphilis as it has produced tuberculosis; syphilitic

nipples of a mother or nurse, vaccination, kissing, the brushing of the throat with infected instruments, in older children sexual contact, are causes of syphilis much too frequently. This acquired syphilis of infancy and childhood is apt to run a swifter and more deleterious course than the same disease in most adults. Therefore it may become necessary to add to the above treatment such methods as have proven most effective and speedy in the most urgent cases of hereditary syphilis.

These urgent cases run a different course from those briefly sketched above. In many the diagnosis of hereditary syphilis can be made immediately after birth. General pemphigus of the surface of the newly-born is not a symptom of syphilis, but localized pemphigus of the palms of the hands and the soles of the feet is. It is but seldom the only symptom, though it requires often a close observation not to overlook the affections of internal viscera and the bones. The latter are often the seat of syphilitic disintegration; in the costo-cartilaginous junctures Wegner has studied the changes worked by syphilis long ago. Liver, spleen, pancreas, and lungs exhibit two different changes, either gummata or intestinal proliferations of the connective tissue. In the liver these are mainly met with along the blood-vessels and bile-ducts, and capable of producing jaundice, and even total and permanent obstruction of the ducts in the fœtus or the newly-born. An early tumefaction of the spleen was the first prominent symptom in one of my cases. Twice I have seen both testicles the seat of syphilitic tumors in the newly-born. The blood-vessels suffer at an early period. The syphilitic arteritis, first described by Heubner, gives rise to congestions and hemorrhages (petechiæ and purpura) on skin and serous membranes, in the intestines and kidneys, in the cranium, and in the thymus gland. And many early brain symptoms and sudden deaths of the newly-born are due to intracranial hemorrhages, œdema, and softening from the same causes. Nor have the sensory organs of the newly-born any immunity. In one, C. S. Bull has met with iritis and choroiditis.

These are the cases in which the systematic calomel treatment is insufficient. In them it is of the utmost importance to get the system immediately under the influence of mercury.



With or without the internal treatment subcutaneous injections of mercury must be made at once. The subcutaneous injections of calomel, which I have tried, like many others, in the adult, have given me, contrary to many assertions of its sponsors, so much trouble in the shape of abscesses or indurations, that I cannot bring myself to recommend them in the newly-born, with its spare connective tissue. But a solution of from one to two grains of bichloride of hydrargyrum in an ounce of distilled water is quite innocuous. It can be safely injected once or twice daily, in doses of from a one-hundredth to one-fiftieth of a grain. That treatment I have followed in many an urgent case more than a dozen years, and can safely recommend it.

When the bones and glands suffer at an early period, the mercurial treatment ought to be combined with the administration of the iodides. Potassium iodide may be given to the infant in doses of from five to twenty grains daily. Under all circumstances, the treatment has to be persisted in many months after the disappearance of the very last symptoms. In spite of that the constitutional disorder may break out again, either in its original form, or as an osteitis only, leading either to caries or to sclerosis; or as a cerebral or spinal affection. Syphilitic arteritis, meningeal exudation, or gummatous tumor may lead to ptosis, nystagmus, facial paralysis, hemiplegia, hemichorea, or idiotism; to myelosclerosis or transverse myelitis. A syphilitic inflammation of the labyrinth with Menière's symptoms has been observed in a girl of five years by Knapp, and interstitial keratitis appears to result from syphilis quite often. In all such cases the energetic treatment with mercury and iodides combined has to be resumed, and continued for an indefinite period. But it has often appeared to me that syphilis will do more than produce those unmistakable symptoms. There are many cases of "scrofula," chronic lymphadenitis, and rhachitis which—with no other causes to account for them—appear to point to previous syphilis not completely extinguished. In a number of my own cases I have personal knowledge of such a history. Such cases do not only explain the fact that many old authors recommended mercury in "scrofula" and "rhachitis," but also that there are some in which that treatment is indispensable. But lately I

had to deal with chronic cervical adenitis, mainly of the left side, and pulmonary infiltration of the left upper lobe, in a baby of two years. They resisted the usual treatment for more than a year before the suspicion of its syphilitic nature was roused and the history of the disease elicited. Six weeks of a mercurial and iodide treatment have worked a miraculous change in the local and general condition.

#### 6. *Hemorrhagic Diathesis.*

Under this head I propose to treat of purpura, the hemorrhagic disease of Werlhof, scurvy, peliosis rheumatica, and hæmophilia, because of their similarity of symptoms and their—to a certain extent—uniform anatomical cause. Among them all, the first, with its wide-spread petechiæ and subcutaneous and cutaneous hemorrhages, is most frequently mentioned. It results from all causes interfering with general nutrition, and particularly that of the blood-vessels. Among them are poverty, uninhabitable dwellings, chronic gastro-intestinal catarrh, dysentery, typhoid fever, diabetes, miliary tuberculosis, pneumonia, diphtheria, scarlatina, and measles. The complications with hemorrhages from the nose, stomach and intestines, kidneys, into the brain and retina, are denominated Werlhof's disease. The diagnosis of "scurvy" requires bleeding from the gums, "peliosis" complications with "rheumatic" pain and swelling of the joints, and hæmophilia the hereditary tendency to bleeding of (mainly) the male transmitted through the female.

The alleged defective condition of the blood does not explain the hemorrhagic tendency. No blood, though ever so thin, penetrates a healthy blood-vessel wall. Hydræmia by itself does not produce bleeding without an impaired condition of the tissue of the blood-vessel; thus it is that the same degree of anæmia in women may result in metrorrhagia in one, in amenorrhœa in the other. Infants are peculiarly liable to bleed, because in them the blood-vessel tissue is still undeveloped; the embryonic condition extends into early infant life, and gives rise to the frequent hemorrhages into the brain, meninges, and other serous membranes. When morbid influences are added to this physiological predisposition, the result is easily comprehended.

The treatment is to a great extent preventive. The social condition of a large part of the population is a main cause and ought to be improved. Thus the successful treatment depends largely on the prosperity of all, and is another proof of what ought to be considered a fact, that medical and social questions and aims are frequently identical. Zymotic disorders and eruptive fevers must be treated with a view of sustaining the strength of the system and the vigor of circulation. The heart's action must be watched constantly, and cardiac tonics given before heart-failure sets in. The dietetic treatment of these diseases is at least as important as their medicinal management. In this way hemorrhagic diathesis is kept off, as well as exhaustion.

Medicines can accomplish a great deal, but ergot less than it is often credited with. In these conditions I have often met with its untoward influence on digestion, and but rarely with a favorable influence on the hemorrhagic deposits or processes. Iron also does not appear to yield desirable results; among its preparations the tincture of the chloride is perhaps the best; the tincture of the malate and the liquor of the albuminate are well tolerated. Digitalis has a favorable effect on the heart's action; an infant of a year may take the equivalent of from one to four grains daily for some days, two grains daily afterwards. With it may be combined strychnia; the same baby may take a fiftieth of a grain daily. As relapses are quite frequent, the invigoration of the blood-vessels is the main object in view. From one to three drops of Fowler's solution, largely diluted, may be given every day for a long time. Better still is phosphorus, the method of whose administration, and the doses of which, have been detailed in a former paper. Lead and tannin have not satisfied me at all. Local hemorrhages, when accessible, will require the application of ice, or compression of the bleeding vessel. The success of the preventive treatment of hæmophilia will be rather doubtful as long as the individual is not controlled by the community in regard to the demands of public health. The daughters of hæmophilic families ought to be prevented from, and protected against, contracting marriages and having children.



7. *Diabetes.*

*Diabetes mellitus* is by no means a common disease among infants and children, but it is not so rare as some will have it, nor so frequent as those assert who have found sugar in the urine of infants whose food was supplied with an unusual quantity of sugar. Indeed, traces of sugar are often met with in the urine of nurslings. But this is not "diabetes."

In the ten years before 1860 there were thirty-one deaths from actual diabetes in Great Britain, in children under fifteen years, annually. Since that time the occurrence of the disease in every period of life appears to have increased considerably. Hereditary and family influences, such as neuropathies, epilepsy, insanity, syphilis, exert a great influence. Caron reports the cases of three children of the same mother, at the ages of three and a half and one and a half years, and of three months. Hydrocephalus, injuries to the head, colds, atrophy of the pancreas, dysentery, measles, and scarlatina are referred to as causes. In the few cases which have come under my own observation I could not elicit a cause. The highest percentage of sugar I have noticed in a child (boy of four years) was six and one-half. Heubner observed eight and one-half, with a daily quantity of five thousand grammes, or three and a half quarts. The prognosis is not so good as Redon and a few others appear to believe. The disease runs a more rapid course in infants and children than in adults, and terminates more readily in coma and death. Therefore the treatment must be circumspect and energetic. Strict antidiabetic diet must be enforced. Fortunately, the young, with very rare exceptions, are apt to live on milk mostly. Thus less difficulties are encountered in them than in adults. For these also milk, skimmed or not, forms a principal and beneficial part of their nutriment. The medicinal treatment of the young requires some modifications. The facility with which cerebral symptoms ("coma") are developed, renders the persistent use of alkalies advisable (mineral waters), and forbids the use of opium. Iodoform, which I have seen to render fair service in adults, in daily doses of from ten to twenty grains internally, is seldom tolerated by the young, even in proportionately small doses. Arsenic may be given in increasing

doses a long time, the bromide as well as other preparations, one drop and more of Fowler's solution, largely diluted, after meals, three times daily, the dose to be increased gradually until doses of from two to four drops are taken. As in every disease which resists treatment to an unusual degree, a large number of other medicines have been recommended. As these remarks are not a library, but written for practical purposes only, I abstain from enumerating drugs which I believe to be useless. There is one, however, which, in connection with everything destined to improve digestion and assimilation, appears to have a very favorable influence on the diabetic process. Salicylate of sodium, with an alkaline beverage (Selters, Vichy) has a decidedly favorable effect. A child of five years may take from five to eight grains, three times a day, and continue its use for many weeks, to advantage.

*Diabetes insipidus* is a rare disease, but more common than diabetes mellitus. A large amount of urine of a low specific gravity ( $1000\frac{1}{2}$  to 1005) is secreted daily. The increased micturition, great thirst, and emaciation are among the prominent symptoms. In some cases there appeared to be a hereditary influence. Syphilitic and other brain lesions, and injuries have been found to explain its occurrence. In one case of mine it ceased after the removal of a *tænia mediocanellata*, together with a copious and constant salivation, in a girl of five years. Inveterate masturbation and consecutive "neurasthenia" appeared to be the cause of the excessive flow of urine in several children of from four to eight years. It ceased gradually with the restoration of correct habits and better general health. Of the remedies which have been recommended, I mention valerian, valerianate of zinc, bromides, salicylate of sodium, and galvanization of the head. All of these proved unsatisfactory in my hands. But I have seen good results, and sometimes speedy improvement, from the administration of ergot and atropia. A child of five years may take daily, of the former half a drachm or more (extr. fluid, or the corresponding amount of extr. ergot., or ergotin), of the latter one-hundredth of a grain or less. More reliable than either has been strychnia, in three daily doses of one-hundredth of a grain each, or more.

(To be continued.)

## DISEASES OF THE MOUTH (NON-SURGICAL).

BY F. FORCHHEIMER, M.D.,

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(Continued from October Number.)

### I.—STOMATITIS CATARRHALIS.

*Treatment.*—The importance of conscientious treatment is to be found in the fact that this disease may be the forerunner of other more serious troubles, as has already been pointed out. As a rule, a general catarrhal stomatitis runs a favorable course without any special treatment. Indeed, it must be taken for granted that this is the case in the great majority of instances, as the better class of children, only, are under such strict surveillance as to be placed under the care of a physician whenever a slight ailment exists. It is impossible to enter into such details as would cover the whole ground in each individual case; this is fortunately unnecessary, as after all the principles of treatment are the same whether applied to an inflammation of the mouth or any other part of the body.

Prophylaxis is highly important; with nurses we usually find the two extremes in the care of the mouth of infants. They are either oblivious of the necessity of looking after the mouth, or they treat it with such violence as to do more harm than good (see chapter on Bednar's aphthæ). The rough finger of the rougher nurse is used as the means for cleaning the mouth,—perhaps wrapped in a diaphanous handkerchief,—and this is pushed into the unoffending mouth, scraping away everything with which it comes into contact. Or the mouth is never examined at all, and, much to the surprise of every one, there develops suddenly a stomatitis of one kind or another. Under normal circumstances, the mouth of every infant ought to be washed out several times daily with lukewarm water which has been previously boiled. A small wad of absorbent cotton, wrapped upon a smooth stick or wire, is as good a con-



trivance as any, as it insures cleanliness and, with reasonable care, is perfectly safe. For infants and restless children the cotton can be wrapped around the finger of the nurse. The rule must be laid down as absolute that the cotton must be replaced by a fresh piece every time the cleansing is done. A large camel's-hair brush is more convenient but not so safe, as far as being the possible carrier of infection. Mothers must be taught to regard cleanliness in the mouth as of the same importance as upon the external surface. For this reason they must be told how to keep their nipples in good condition, and if the child is brought up artificially, how to take care of all of the various articles necessary to artificial feeding. The quality and physical properties of the food, in the latter instance, must be especially dwelt upon, notably the temperature. In older children, the tooth-brush will frequently prevent attacks of localized stomatitis. All irritating substances which act as foreign bodies, such as sharp teeth, accumulations of so-called tartar, perialveolar abscesses, etc., must be treated and, if possible, removed. In the course of febrile affections much can be done to prevent affections of the mouth, which, unfortunately, are still too common. If the patient is old enough he can be taught to suck small pieces of linen which have been dipped into ice-water or in which small pieces of ice have been wrapped. The sordes, cracked tongue, etc., of continued fevers can be easily prevented by a moderate amount of care. If we are dealing with a young child or one delirious, frequent washing of the mouth with cold water will accomplish the end almost as readily. Either of these plans is both grateful and beneficial to the patient; grateful, especially, in that it relieves the thirst which is always present with high fever.

The treatment of the affection, once the cause is removed, is a very simple matter. All food must be given cold,—it causes less pain to the patient and reduces the swelling of the mucous membrane. If necessary the milk can be cooled by putting the vessel containing it into ice. This, however, is purely empirical, as some children with stomatitis catarrhalis bear their food better when it is quite warm. In children at the breast this falls away, of necessity, as it would be reprehensible to change the food on account of the benefit which might accrue

by having its temperature reduced. The mouth must be gently washed, as often as possible. Cold water, ice-cold if necessary, which has first been boiled is, as a rule, sufficient. As lotions a great many substances have been used: boric acid (two- to three-per-cent. solution), sodium biborate (five to ten per cent.), zinc sulphate (one-half to one per cent.), salicylate of sodium, salol, etc. Most, if not all, are unnecessary except as to the probability of directions being followed more exactly when a mouth-wash is prescribed. The internal or external use of potassium chlorate is also unnecessary and, according to my experience, valueless in this form of trouble. Unless absolutely indicated, potassium chlorate ought not to be used, on account of the risks attending its administration; it does not seem necessary to take any risks in the treatment of a simple stomatitis. The most reliable of all medicaments is silver nitrate (one-half to one per cent.). If the stomatitis does not disappear in three or four days, the mouth ought to be pencilled with this weak solution of silver nitrate once a day. Before applying the solution the mouth must be carefully washed out with cold water. Whenever there is a loss of epithelium, or an ulcer, the mitigated stick should be used. A small quantity melted on to a silver probe forms an excellent weapon for fighting these apparently insignificant but very painful lesions. It is no uncommon experience to find a child taking its food again after a small erosion has been touched with this substance. The larger ulcers, especially, are to be treated in this manner. Cysts must be opened, the sooner the better, by a free incision. If they should fill up again, cauterization of their walls should be resorted to. The treatment of those forms due to dentition will be discussed in the proper chapter.

## II.—STOMATITIS APHTHOSA.

In discussions on this subject we find confusion most dire. In looking through the literature it will be found that so many things are called aphthæ, and so many things have been called aphthæ, that but one of two courses remains to be taken,—either the term aphthæ must be discarded entirely, or we must make our definition of the term so precise that mistake is impossible. As has been pointed out before, the term

comes from Hippocrates, and gradually it has been made to include nearly every affection of the mouth ; thus, even modern books speak of it as synonymous with thrush or the ulcerative form. The first who gave us a definition for the modern acceptance is Billard ("Maladies des Enfants," p. 230 *et seq.*, Paris, 1837), where a complete discussion of the history of the subject may be found. Billard speaks of a stomatite folliculeuse ou aphtes, but the adjective is to be construed more as referring to the form of eruption than to its location. To Bohn is due the credit ("Die Mundkrankheiten der Kinder," 1866) of having placed exact limits to our conception of what should be meant by aphthæ. It must be remembered, in this connection, that the accepted term has an entirely different significance from that which Hippocrates intended,—he, in all probability, had reference to the mycotic form only when he speaks of *ἀφθαί*. As a result, some modern authors still speak of aphthous sore mouth as thrush ; but, unfortunately, whenever this is done a description is given which shows very clearly that the author is describing several forms under one heading which have no possible connection with each other. If all authors would unite and give to the term aphthous or aphthæ (either adjective or noun) the Hippocratic sense there certainly could be no objection raised. But as it is, the two courses mentioned above are the only ones possible. As far as rejecting the term altogether is concerned, Bohn has done so much to establish the identity of the affection, and it has been taken up by so many authors (all the German, some of the French, English, and American) that it would seem like taking a retrograde step to drop the term. In addition, the confusion that already exists would be increased, and that which has been gained by precision would be lost. As a result the term stomatitis aphthosa has been retained to mean that form of disease described by Bohn.

*Definition.*—By aphthæ are meant spots, of different color, appearing within the mouth, situated under the epithelium, surrounded by an areola, again of varying color, which run a peculiar course during their existence. As far as the nature of these spots is concerned there still exists considerable discussion. There are principally two opinions expressed. The one, that



we are dealing with a vesicular eruption ; the other, that we are dealing with a solid exudation between the cutis and epithelium. The great objection urged against the former view by Bohn and his followers, that they have never seen any fluid within the spots, is, apparently, a very valid one. But if we take as simple a matter as herpes, it will be seen that if we were to judge this eruption by the presence or absence of fluid within the efflorescences we might, in a great many cases, be led to the conclusion that herpes is also a solid exudation between the cutis and the epithelium. If to this there is added the fact that all forms of skin-trouble do and must, of necessity, take upon themselves a different form within the mouth than upon the skin, a great deal of the force of Bohn's argument is lost. It certainly must be accepted as a fact that the epithelial layer is regenerated much more rapidly within the mouth than anywhere upon the surface of the body. This, taken together with the constant bathing with fluids, under pathological conditions even greater than in health, and the great disparity that exists between the two views can be readily cleared away. When we come to compare the clinical history of some forms of herpes and of stomatitis aphthosa, it will be found that the view which makes both processes due to the same causes is, to say the least for it, very enticing. When, added to this, there is a series of carefully-conducted bacteriological investigations which give a negative result, as far as pathogenic organisms are concerned, we will have to think even more seriously of this view.

As far as locality of eruption is concerned there can be but one opinion. Aphthæ appear in parts of the mouth in which there are no follicles ; therefore the eruption cannot be follicular in the sense that it is the result of some process which goes on within the muciparous glands. This, on the other hand, does not prevent our acknowledging the fact that an aphthous eruption may appear at the mouth of a follicle any more than our accepting the fact that an herpetic eruption may develop at the opening of a sebaceous follicle or sweat-gland. Yet no one would think of calling herpes a follicular eruption.

Again, concerning the term aphthous ulcer, to which Bohn objects so strenuously. This depends entirely upon what may

be defined as an ulcer; if there is necessary both a disturbance of continuity and the appearance of pus we can certainly not speak of the existence of an aphthous ulcer, as it is exceedingly rare to find pus in appreciable quantity the result of aphthous stomatitis. If we go further and accept Billroth's view, that the appearances in the intestines in typhoid fever must not be considered as ulcers because they have a tendency to heal (it being absolutely indispensable for an ulcer not to have the tendency to get well), then we can certainly not speak of the epithelial sores made by aphthæ as ulcers. On the other hand, the local conditions referred to above must be again taken into consideration. We must also bear in mind that we are dealing with a term which is used with more or less freedom by the profession, and although, theoretically, such a loss of substance as is produced by an aphtha is not an ulcer, yet, for all practical purposes, it must be considered as such. As will be seen farther on, the epithelial loss produces symptoms just as well marked and as intense in their nature as if pus were being formed, or as if there existed a tendency to spontaneous healing.

(To be continued.)

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## THE INFLUENCE OF SEWERAGE AND WATER POLLUTION ON THE PREVALENCE AND SEVERITY OF DIPHTHERIA.\*

BY CHARLES WARRINGTON EARLE, M.D.,

Professor of Pediatrics, Woman's Medical College, and of Obstetrics, College of Physicians and Surgeons, Chicago.

It may truthfully be said that no one cause has, up to this time, been named as producing diphtheria which has been universally accepted by the great mass of the profession.

All kinds of dirt, all kinds of emanations from every kind of filthiness, atmospheric influence, and germs have been included in the etiology of this disease.

It has been claimed by many that imperfect sewerage has

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\* Read before the Section of Pediatrics, Ninth International Medical Congress, Washington, D.C., September, 1887.

been the cause, and the people, urged on by the opinion of the doctors, frequently blame a sewer for poisoning a family and producing diphtheria, when, in my judgment, the cause should be placed elsewhere. It is much better for us to recognize the true cause, if it is possible to find it, rather than to attack an imaginary one, for it is possible that, while we are fighting the supposed gas as the cause, we are losing sight of the real enemy which should engage our attention.

Jacobi says that cases of diphtheria which are traced to exhalations from sewers or even to filthy habits of life are very frequent. This opinion, especially in regard to sewerage, has been reiterated by scores and hundreds of physicians. It represents the prevailing idea of American physicians.

English practitioners are particularly the advocates of the sewer-gas theory. In the *British Medical Journal*, December 1, 1883, J. Emmett Holt gives an account of the disease as it occurred in Canterbury. Investigation showed the well-water to be extensively contaminated with sewer-gas in every instance. In addition to the drinking-water being polluted, there was found a drain running under the parlor, letting sewer-gas enter the living-room of the family.

I cannot hope to have discovered the one cause of diphtheria, or to prove that sewer-gas does not in many cases influence this disease. But I have been impressed for many years that undue importance was given it as a causative factor, and have thus been led to investigate the prevalence of this dreadful disease in locations remote from any sewer-gas influence.

It appeared to me that investigations to demonstrate my theory should be conducted at great distance from sewers, and the location should have pure air and pure water; and that in the great Northwest of the United States of America these conditions could best be found.

In the following briefly-described States and Territories I concluded to make my inquiries:

*Minnesota*.—Population in 1885, 1,117,798; square miles, 83,531.

Rolling prairies, dotted with lakes and belts of timber.

The summers are cool and pleasant, and while the winters are cold, the air is dry and clear.



*Dakota.*—Population, 415,263 ; square miles, 150,932.

In the main, prairie ; climate mild and genial ; winters cold and dry ; bracing and invigorating air ; average rainfall twenty inches.

*Montana.*—Population, 1880, 39,159 ; square miles, 143,776.

Climate milder than would be supposed from the altitude ; soil exceedingly fertile ; a great grazing country.

*Wyoming.*—Population, 1880, 20,789 ; square miles, 97,980 ; rich in mineral, and its surface is broken by mountain ranges and deep river canyons.

*Kansas.*—Population, 1880, 996,096 ; square miles, 81,318.

The surface, which is made up of prairies and river bottoms, slopes from the Rocky Mountains to rivers on the east. The climate is very healthful.

*Utah.*—Population, 1880, 143,963 ; square miles, 84,476. An immense plateau between the Rockies and Sierras, consisting of smaller mountains, plains, valleys, and basins.

Climate mild and dry.

*Idaho.*—Population, 1880, 32,610 ; square miles, 86,294.

Climate cool and healthful.

This Territory is rich in mineral, but the cereals flourish abundantly. It contains vast forests of fir, pine, and hemlock.

*California.*—Population, 1880, 864,494 ; square miles, 188,981.

Climate variable, on account of extent of territory along the Pacific coast. Temperature ranges from 50° below, in the north, to 70° above at the south.

These States and Territories help to make up the great Northwest of our country. Part of this immense region is traversed by our highest mountains and watered by rapid rivers. Much of it is prairie. The purest air in the world is abundant, and many of the habitations, particularly in the early times, were built on posts some distance from the ground. There is not a sewer within a hundred miles of some of these houses, and yet diphtheria is found.

To the physicians in this great country I addressed a communication with the following questions :

1. Does diphtheria occur frequently in your vicinity ?
2. What season of the year to the greatest extent ?

3. How far are you from any sewers?

4. Have you ever attended cases exceedingly remote from any supposed source of infection?

5. Have cases occurred in your practice in habitations raised from the ground so that no possible decomposing material under the house could act as a cause?

6. Have cases occurred in your practice among the mountains, where the water-supply is from pure springs or running brooks, where pollution from cesspools, water-closets, or sewers was absolutely impossible?

7. Does proximity to barns or stables seem to predispose to the disease?

From among many who have kindly answered my communication I select the following as having some bearing on the questions involved.

Dr. Hurlburt says that our cases are, almost without exception, traced to some infected person or clothing. He also gives another cause, which I think demands attention,—that is, railroad cars as a means of conveying the contagion from one place to another, and as the place where the contagion may be taken into the systems of little people who are riding in the coaches.

Dr. Spaulding says that he passed through a severe epidemic with great fatality two years ago. "Our drinking-water is free from all organic matter and the habitations are upon high ground."

Dr. Cushman says that cases appear sporadically, and then other cases appear miles away with no visible connection. "Cases occurring in sod houses, and houses situated on low ground, seem more virulent."

Dr. Spooner, whose experience has been great according to the testimony of others, answers my questions very fully, to such an extent that I produce nearly his entire letter:

"LAKE PRESTON, KINGSBURY CO., DAKOTA,  
July 14, 1887.

"DEAR DOCTOR,—I am pleased to receive your letter of inquiry, and will endeavor to answer to the best of my ability.

"*Query* 1. We have cases of diphtheria almost every month in the year. Since May 9, last, there have occurred in my

practice in this vicinity eight cases. In the practice of others four cases, and two\* cases that were undoubtedly diphtheria that were unattended by any physician, but which did not originate here, making fourteen cases. Two of them undoubtedly contracted the disease in transit from Norway, as one of the same family, a babe, died on shipboard from the same disease, if the statements of the parents are to be relied on. Five of my cases contracted the disease from the two survivors of the family who had the disease after coming to Dakota. So the disease, so far as we are able to ascertain, really originated here in one-half these cases only. In the four treated by others the origin of the cases is unknown: In the three remaining cases treated by myself one visited a family where a patient had had the disease and was supposed to be convalescent, but that was the only possible source of infection, so far as I could gather from carefully questioning the patient and friends. The remaining two cases of mine were patients who had had the disease before; origin at this time unknown.

" *Query 2.* I cannot say positively, but, in my practice, the majority of cases have occurred from January to September.

" *Query 3.* We are forty miles from any sewers; so far that it does not enter into the consideration of this question at all. I may say, perhaps, that a lack of proper drainage seems to furnish suitable conditions for both the development and the propagation of the diphtheria germ.

" *Query 4.* I have attended cases where it was impossible to decide the cause of the disease; and as far as being remote from any 'possible source' it would be exceedingly difficult to decide; but I can say they were remote from sewers; in fact, all cases coming under my observation have been those where the sewerage did not enter into the consideration of the case at all.

" *Query 5.* In a number of instances the cellars have been perfectly clean and free from decaying vegetables. In at least six or seven instances of separate families it has been the case that there has been no *possible* source of infection from the presence of decomposing material under the house.

" *Query 6.* I have never practised in mountainous districts;



but some of my most violent and malignant cases have occurred on the highest points of land in the country. The cause to my mind was evident,—i.e., an unclean cistern, with no attention to hygiene, in-doors and out.

“*Query 7.* My opinion is that proximity to barns and stables enhances the liability to the disease. I cannot say it causes it, but believe, the diphtheria germ being present as the prime factor, these other conditions are potent factors in the propagation of the disease and in the continuation of it.

“In Dakota my practice has been on the prairie exclusively, as there is nothing but prairie here. Our prairie has scattered all over it ponds of water during a wet or moderately wet season. We are in close proximity to a number of lakes, which are really the head-waters of the Vermilion, a stream one hundred miles in length, a tributary of the Missouri. We are on a point of land which has nearly the greatest elevation in Southern Dakota, unless it be the Wessington Hills. The surface is undulating. Winds prevail from the south and southwest. The soil is a black sandy loam; underlying this a yellow clay; except in the vicinity of the lakes the clay is shallow and more sand appears in the soil. The atmosphere contains less moisture than in Iowa or Minnesota; it is what is termed a dry atmosphere.

“The wells in this vicinity are generally dug through the humus or loam, and the water is found at variable depths in either sand and gravel or clay, at a depth varying from eight or ten feet to thirty. The majority of wells average about twelve feet.”

Dr. Kreychie says that he has seen cases in houses where potatoes and other vegetables were stored under the building. Several gentlemen seem to think that decomposing material, such as vegetables, especially with moisture, predispose to the disease. Two and three children will die in the same house within a very short period. Indeed, the virulency appears quite as terrible as in our large cities. The same gentleman narrates the history of a family of five persons living in a sod shanty with filthy surroundings, a cesspool and a lot of manure in front of the shanty. Three children were taken

with the disease, and all died within the space of about ten days. Some miles from his home there live a few families on the banks of a sluggish stream of water that flows only in the spring. There has not been a spring since he settled there that some of those families have not had a case of severe diphtheria occurring.

Dr. Kelly has attended cases of malignant diphtheria remote from sewers and all possible sources of infection. He attended one case five miles from another habitation. He believes proximity to stables, where there is a good deal of filth, seems to predispose to the disease.

Dr. Watkins says diphtheria is rare in Wyoming; that he has seen only one case in eight years, and that of a very virulent type. He thinks that was caused by the child's stirring up the town dump of manure.

Dr. Hazlett says that in one epidemic in his county, in a town on the high prairie, he had a number of cases, many of which died in spite of all that could be done. In one of his families, where all possible pains had been taken in regard to cleanliness and to escape any effect of decomposition, the house standing on raised ground and some distance from barns, fatal cases occurred in his practice.

Dr. Ormsby writes that he has found diphtheria in houses miles from any others, at the mouth of a canyon where the purest of mountain air prevailed and no possible chance for decomposition existed. He does not see how sewer-gas or decaying vegetables can have anything to do with the disease.

Dr. Gregor says that in the epidemic of 1882, which was particularly fatal in a little settlement near the top of the mountain, at an elevation of nine thousand feet, this settlement consisted of probably a dozen houses built around what used to be a small lake, but at that time dry. The water had been drained off from the lake by a mine below. The water used by these people, however, for household purposes, is perfectly pure, coming from watercourses from above and where it was not possible that contamination existed.

Dr. Kahler says that it occurs frequently in elevated situations, where no possible decomposing material existed. It takes

place frequently in mountainous districts, where the water is pure and no cesspools or water-closets are present.

Dr. Dubois, two hundred and ninety miles from a railroad, in a vicinity where there are no sewers, has passed through one epidemic of diphtheria. Water-supply is from springs, and the climate is particularly unfavorable to the conditions usually producing this disease.

Dr. Crowder says that the worst case he ever saw was in a habitation upon the sandy soil, in the hills, and fifteen miles away from any point of infection. He knows from experience that it will and can exist in all its malignancy where there are no sewers.

Dr. Frank H. Payne says, "I have had considerable experience with diphtheria, especially during the winter of 1885-86, when about seventy cases occurred in my practice. I found that the disease occurred under every condition and circumstance of life; sometimes as divergingly different as could possibly be. In miserable, filthy hovels, with poor sewerage and every condition favorable for its propagation, and again in well-ventilated, well-sewered houses, where disinfection is constantly practised and cleanliness observed.

"I have had isolated cases in the mountains where no sewers existed and every condition seemed favorable to health. But I must confess that it is very difficult to stamp out the disease when it exists in an unfavorable, bad-sewered locality. Such conditions seem to favor its spread, and I am also inclined to believe have some influence upon the disease as to its virulence.

"In a region swept by the fumes from an acid factory (sulphuric acid) I have never had cases, except once, which was directly traceable to exposure to a virulent form of the disease while in the city."

Dr. Tyrrell says that, inasmuch as he is a strong believer in the specific cause of diphtheria, he thinks that sewer-gas has nothing to do with it. His belief is,—“no germs, no diphtheria.”

However hard we may try to avoid accepting the germ theory of diphtheria, there is coming to be such a mass of evidence in favor of it that it is almost irresistible.

Some of the facts which I have presented in this paper seem



to militate against the theory. It is, however, facts that we want, and upon the foregoing it seems I am warranted in making the following conclusions:

*First.* Diphtheria occurs in the mountains and prairies of the great new Northwest with the same malignancy as in cities.

*Second.* Diphtheria takes place with equal virulence in vicinities remote from sewers.

*Third.* Diphtheria, once present, the inhabitants living in damp sod houses, or over cellars containing decomposing vegetables, or in proximity to manure heaps, or poorly-constructed sewers seem to be in surroundings which increase the severity of the malady.

*Fourth.* The fact is again demonstrated, although developed incidentally, that the contagious element may be carried or transported thousands of miles in a manner difficult to understand.

*Fifth.* Testimony is abundant that the poison may be transported by means of cars and steamers. This fact calls for increasing watchfulness and more efficient means of disinfection than have been heretofore practised by our transportation companies.

*Sixth.* To such a degree is this terrible disease contagious,—a few in our profession, however, declining to acknowledge it, and the majority of the people persistently refusing to isolate their children,—it appears to me that the only method by which we can prevent the spread of diphtheria is by the enactment of laws compelling the people to assume some responsibility in regard to contagious diseases.\*

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\* The following-named physicians have kindly contributed information embodied in this report:

Drs. J. S. Kreychie, I. R. Spooner, and R. A. Cushman, from Dakota.

Drs. G. G. Tyrrell, Charles Ambrook, H. C. Crowler, C. M. Bates, and F. H. Payne, from California.

Drs. W. W. Hammond, J. D. Carnahan, August Boucher, Gilbert Gregor, F. S. Kahler, A. C. Ormsby, and John Alfred, from Utah.

Drs. E. A. Spaulding and Herbert Hurlburt, from Minnesota.

Drs. G. B. Snyder, E. E. Hazlett, and J. M. Wade, from Kansas.

Drs. A. D. Kibbie and J. K. Dubois, from Idaho.

Dr. J. C. Watkins, from Wyoming.

Drs. B. B. Kelly and Alex. McLeod, from Montana.

## THE AMERICAN PEDIATRIC SOCIETY.

THE American Pediatric Society met for permanent organization in Washington, D.C., September 18, 1888, in a parlor at the Arlington Hotel. The first session commenced at 10 A.M. In the absence of the temporary Chairman, Dr. J. Lewis Smith, of New York, the meeting was called to order by the temporary Secretary, Dr. W. D. Booker, of Baltimore.

Dr. A. Jacobi, of New York, was elected temporary Chairman, and Dr. W. D. Booker, of Baltimore, temporary Secretary.

By request of the Chairman the Secretary gave a brief statement of the preliminary organization of the Society, as follows:

"After the adjournment of the Pediatric Section of the Ninth International Medical Congress, September 9, 1887, a meeting was held by a few of the members of the Section, and on motion of Dr. W. D. Booker, of Baltimore, seconded by Dr. I. N. Love, of St. Louis, it was decided to organize The American Pediatric Society. Dr. J. Lewis Smith, of New York, was elected temporary Chairman, and Dr. W. D. Booker, of Baltimore, temporary Secretary. The Chairman was authorized to take such measures as he saw fit to secure the co-operation of some of those physicians who had taken a special interest in the advancement of the study of diseases in children, and, when advisable, to appoint five of these to act with the Chairman and Secretary as a council to arrange for the permanent organization of the Society. Notices were sent to a limited number of physicians who had become known through their interest and work in promoting a more scientific study of diseases in children, asking for their views in regard to the propriety of establishing the Society, and inviting co-operation. The response to these invitations showed a general desire to organize the Society, and a hearty co-operation was promised. With this cordial approval of the movement it was decided to leave the permanent organization of the Society to be effected altogether by those participating in it, so that

all could have an equal voice and responsibility in whatever measures were adopted. No further steps were taken in the matter except to send the announcement of this meeting to those who had accepted the invitation to participate in it."

The motion was then made by Dr. Watson to organize The American Pediatric Society, which was unanimously carried.

Drs. Jacobi, Booker, and Watson were appointed a committee to draft a constitution, and to report the same at 12 M., to which time the Society adjourned.

#### SECOND SESSION.

The Society was called to order at 12 M. by the temporary Chairman, Dr. Jacobi. The committee reported the draft of a constitution (see page 667), which was unanimously adopted, after which the permanent officers (see page 670) were elected.

Dr. Meigs moved that propositions for membership be considered in order, during the present session of the Congress of American Physicians and Surgeons. Carried.

Dr. Latimer moved that each member be assessed five dollars, to be passed to the credit of dues for the ensuing year. Carried.

The Secretary read a communication from Dr. William Pepper, Chairman of Executive Committee of the Congress of American Physicians and Surgeons, extending, in the name of that committee, a cordial invitation to the members of this Society to attend the sessions of the Congress. Also one from Dr. S. C. Busey, Chairman of Committee of Arrangements, granting to the members of this Society the same privileges to the social entertainments as were enjoyed by the members of other special societies.

It was moved that this Society apply for admission to the Congress of American Physicians and Surgeons. Unanimously carried.

The Secretary was instructed to present the application to the Executive Committee of the Congress.

Dr. A. Jacobi was elected delegate to the Congress.

The Society then adjourned to meet next year, the time and place to be decided upon hereafter.



## CONSTITUTION AND BY-LAWS.

### ARTICLE I.

#### OBJECTS OF THE SOCIETY, AND NAME.

The Society has for its object the advancement of the Physiology, Pathology, and Therapeutics of Infancy and Childhood. It shall be known as THE AMERICAN PEDI-  
ATRIC SOCIETY, and shall hold an annual meeting.

### ARTICLE II.

#### PROCEEDINGS.

The proceedings shall consist of:

1. Discussions on subjects previously selected.
2. Original communications.
3. Demonstrations of gross and microscopic preparations, of apparatus and instruments.

### ARTICLE III.

#### MEMBERS.

There shall be members and honorary members. The number of members shall be limited to one hundred. Physicians of sufficient eminence to merit the distinction may, to a number not exceeding twenty-five, be elected honorary members, and as such shall be entitled to attend all meetings and take part in the proceedings, but not to vote upon business questions.

### ARTICLE IV.

#### ELECTION OF MEMBERS.

Nominations to membership shall be made at a regular meeting of the Society, and shall be referred to the Council, which shall report those nominations which are approved by it to the next annual meeting for action. A three-fourths vote shall be necessary for election of members, but for the election of honorary members a unanimous vote of those present shall be required.

### ARTICLE V.

#### ANNUAL DUES.

Each member shall pay an annual fee of ten dollars. Honorary members shall be exempt from fees.

## ARTICLE VI.

## OFFICERS.

The officers shall consist of a President, two Vice-Presidents, a Secretary, a Recorder, a Treasurer,—all to be elected annually,—and a Council.

## ARTICLE VII.

## DUTIES OF OFFICERS.

The duties of the President, Vice-Presidents, Secretary, and Treasurer shall be those usual to these officers. The Recorder shall secure the papers read, and see that proper notes are taken of the discussions thereon, for the use of the Committee on Publication.

## ARTICLE VIII.

## COUNCIL.

The Council shall consist of seven members, who shall be chosen at the first meeting by ballot. One, selected by lot, shall retire at the end of the first year, and shall not be immediately eligible to re-election; another, similarly selected, shall retire at the end of each year, until all of those originally chosen shall be disposed of, after which one shall retire each year, in the order of election, and his place be supplied by another.

## ARTICLE IX.

## DUTIES OF COUNCIL.

It shall be the duty of the Council to suggest the subjects for discussion, to consider the nominations for membership, and to report on them at the meeting at which they shall be balloted on. The Council shall also be a Committee on Nominations to Office, and as such shall present a report at the morning session of the last day, at the conclusion of which session the election shall be held by ballot.

It shall appoint a Business Committee of three, who shall, with the President and Secretary, make all arrangements for the meeting, including the preparation of a programme.

ARTICLE X.

PUBLICATION COMMITTEE.

The Secretary, Treasurer, and Recorder shall constitute a Committee on Publication, to which shall be referred all papers, reports, and other matters intended for publication.

ARTICLE XI.

CHANGES IN CONSTITUTION AND BY-LAWS.

Proposals for changes in the Constitution and By-Laws must have been made at the meeting previous to that at which they are voted on, and the notices for which shall contain an announcement of the proposed changes; and such changes shall require, for their adoption, an affirmative vote of three-fourths of those present.

ARTICLE XII.

EXPULSION OF MEMBERS.

A member may be expelled from the Society for conduct unbecoming a physician and a gentleman. In such cases formal charges must be made by two members, which shall be referred to the Council. Membership shall lapse because of absence from three successive meetings without reason acceptable to the Council.

ARTICLE XIII.

QUORUM.

Any number of members present at the appointed time of the annual meeting shall constitute a quorum for the transaction of ordinary business; but for the election of members, fifteen shall be necessary for a quorum; and for the expulsion of members or for altering the Constitution and By-Laws, twenty-five members shall be necessary.

ARTICLE XIV.

ORDER OF BUSINESS.

1. The President shall call the meeting to order and open the session by an address. In his absence one of the Vice-



Presidents shall preside, and in the absence of all of these officers the Chairman of the Council.

2. The discussions shall be the next order of business, and shall be confined to the first morning session. The two members appointed to open the discussions shall, as a rule, not occupy more than twenty minutes each. Subsequent speakers shall be restricted to ten minutes each.

3. Voluntary papers shall not exceed twenty minutes in the reading. In the discussion following the reading of such papers, remarks shall be limited to ten minutes.

4. Demonstrations shall be provided for in the afternoon sessions.

5. Members chosen to discuss subjects previously selected must send an abstract of their report to the Council, for distribution to members previous to the meeting.

6. In the morning session of the last day, of which it shall be the first business, the report of the Council as a Committee on Nominations to Office and to Membership shall be made, and ballot shall be held thereon.

#### OFFICERS OF THE SOCIETY.—1888-9.

<i>President.</i> —A. JACOBI, M.D.....	New York.
<i>First Vice-President.</i> —A. V. MEIGS, M.D.....	Philadelphia.
<i>Second Vice-President.</i> —F. FORCHHEIMER, M.D.....	Cincinnati.
<i>Secretary.</i> —W. D. BOOKER, M.D.....	Baltimore.
<i>Recorder.</i> —WM. PERRY WATSON, M.D.....	Jersey City.
<i>Treasurer.</i> —CHAS. WARRINGTON EARLE, M.D.....	Chicago.

#### *Council.*—1888-9.

T. S. LATIMER, M.D.....	Baltimore.
J. M. KEATING, M.D.....	Philadelphia.
I. N. LOVE, M.D.....	St. Louis.
J. H. RIPLEY, M.D.....	New York.
S. C. BUSEY, M.D.....	Washington.
C. P. PUTNAM, M.D.....	Boston.
A. D. BLACKADER, M.D.....	Montreal, Canada.

#### *Members.*—1888-9.

ADAMS, S. S., M.D.....	Washington.
BARUCH, S., M.D.....	New York.
BILLINGTON, C. E., M.D.....	New York.
BLACKADER, A. D., M.D.....	Montreal, Canada.

BOOKER, W. D., M.D.....	Baltimore.
BROWN, DILLON, M.D.....	New York.
BUSEY, S. C., M.D.....	Washington.
CAILLÉ, A., M.D.....	New York.
CARE, W. L., M.D.....	New York.
CHAPIN, H. D., M.D.....	New York.
DORNING, JOHN, M.D.....	New York.
EARLE, CHAS. WARRINGTON, M.D.....	Chicago.
EDWARDS, W. A., M.D.....	Philadelphia.
FORCHHEIMER, F., M.D.....	Cincinnati.
FRUITNIGHT, J. H., M.D.....	New York.
HAVEN, H. C., M.D.....	Boston.
HOLT, L. EMMETT, M.D.....	New York.
HUBER, F., M.D.....	New York.
JACOBI, A., M.D.....	New York.
KEATING, J. M., M.D.....	Philadelphia.
KOPLIK, H., M.D.....	New York.
LATIMER, T. S., M.D.....	Baltimore.
LOVE, I. N., M.D.....	St. Louis.
MEIGS, A. V., M.D.....	Philadelphia.
MOORE, C., M.D.....	London, Canada.
NORTHRUP, W. P., M.D.....	New York.
O'DWYER, JOSEPH, M.D.....	New York.
OSLER, WM., M.D.....	Philadelphia.
PEPPER, WILLIAM, M.D.....	Philadelphia.
PUTNAM, C. P., M.D.....	Boston.
REID, JOHN J., M.D.....	New York.
RIPLEY, J. H., M.D.....	New York.
ROTCH, T. M., M.D.....	Boston.
SCHARLAU, B., M.D.....	New York.
SEIBERT, A., M.D.....	New York.
SMITH, J. LEWIS, M.D.....	New York.
STARR, LOUIS, M.D.....	Philadelphia.
VAUGHAN, V. C., M.D.....	Ann Arbor.
WATSON, WM. PERRY, M.D.....	Jersey City.
WENDT, E. C., M.D.....	New York.
WILSON, J. C., M.D.....	Philadelphia.
WINTERS, J. E., M.D.....	New York.

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"Cow's MILK, properly sterilized, is the most reliable artificial food for infants."—GEO. M. BOYD, M.D., *Physician to St. Christopher's Hospital Dispensary for Children, Philadelphia.*

## Current Literature.

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### I.—HYGIENE AND THERAPEUTICS.

Lowry: The Therapeutical Value of Mineral Waters in the Diseases of Childhood. (*Med. Rec.*, August 11, 1888.)

The leading mineral waters that are of therapeutic value in the diseases of childhood may be put under the following headings: 1. Saline (alkaline, muriated, sulphated). 2. Sulphurous. 3. Gaseous or carbonated. 4. Ferruginous (carbonated, sulphated). 5. Arsenical, which, strictly speaking, should be distributed under the preceding categories, there being few waters in which arsenic is the leading constituent.

I. *Saline*.—These waters hold in solution different salines (generally sulphates, carbonates, or chlorides, in combination with soda, potassium, lime, or magnesia), which impart to them corresponding properties. Occasionally a saline water, especially a saline muriated, contains iodine and bromine, or iodide of potassium, and such are valuable tonics in scrofula.

These waters are generally aperient, tonic, excitant, feebly laxative, alterative.

Epsom, Carlsbad, Seltzer, Apollinaris, Baden, Ems, Bourbonne, Salins, Salzbrunn, in the Old World; Hathorn or Ballston, Greenbrier, Capon, California Seltzer, Congress, California; Saratoga Vichy (alkaline saline, like the European Vichy), and Bethesda, in America, are of this class.

They are indicated in scrofula, rachitis, articular inflammations, chorea, rheumatism, anæmia.

The best mode of employing them is as hot baths. Simon lays more stress upon their use in baths than on their ingestion. St. Catharines, Ontario, has proven peculiarly successful in scrofula, as baths. Internally it must be given much diluted with ordinary water. Some scrofulas, however, prove entirely rebellious to saline baths, and these should try sulpho-saline waters, as those at Massena, New York, which are to be recommended in the scrofulous dermatoses and chronic ophthalmias. These sulpho-saline waters can be given internally, but with prudence, beginning with minimum doses and increasing *à titons*.

For that obesity, accompanied by atony and feebleness, which is so often present in scrofulous children, one of the



more purgative saline springs is to be recommended, and in the anæmia of scrofula a water like that of the Hathorn Spring is called for (Coan). When chlorosis accompanies anæmia, sea-bathing is the best form of hydrotherapy. In scrofulous phthisis, as well as "erethic" or irritable scrofula, a water corresponding to La Bourboule is desirable in conjunction with ol. morrhua (Simon).

In rachitis, sea-bathing is the most successful form of hydrotherapy.

Hot saline springs are excellent in the chronic rheumatism of children.

In chorea, pediatricists have found that a mineral water, such as St. Catharines Wells, Ontario, which contains chloride of sodium in marked proportion, together with the bromo-iodides, often produces marked results.

II. *Sulphurous Springs*.—Their impregnation with sulphuretted hydrogen, to which their fetid odor is due, is the leading characteristic of these mineral waters. In addition, there is generally found some saline, which modifies their effects.

In their general application these waters are laxative, sedative, tonic, digestive.

Luchon, Bonne, Aix-la-Chapelle, and Barèges, in France, and Harrowgate, Bath, and Dax, in England, are of this type. America is rich in sulphur waters. We find them at the Red, White, and Sulphur Springs, West Virginia; Harbin Springs and Santa Barbara Springs, California; Sulphur Springs, at Sharon, New York, and at Saratoga Lake, the Richfield, Blue Licks, Indian Springs, Georgia, besides many others. The Bladon Springs, near Mobile, resemble Aix and Spa, but not so closely as the Rockbridge Alum Spring, Virginia, which may be prescribed whenever Aix water is indicated. This water is astringent and tonic, and is beneficial in chronic diarrhœa, bronchitis, dyspepsia, nasal catarrh, and scrofula. Another remarkable sulphur spring is the Oak Orchard Acid Spring, the water of which contains considerable quantities of free sulphuric acid,—a rare composition. This water is particularly successful in chronic digestive affections, chronic pharyngitis, and ophthalmias.

The sulphur waters are indicated in cutaneous diseases, digestive diseases, anæmia, scrofula, rheumatism, bronchitis, laryngitis, hepatic engorgements.

An American spring highly praised in scrofulous dermatoses is that of Ocean Spring, Missouri; and the Richfield Sulphur Spring ought to meet the same requirements, being one of the most powerful American sulphur springs.

Rheumatism, frequently overlooked in children, succumbs most often to a thermal sulphurous water (as Virginia Springs, Bath, Dax), the effect being due in large part to the perfectly equable warmth during the whole time of immersion,—a thing impossible in an artificially thermal bath.

In scrofulous subjects where great debility coexists (accompanied by adenitis, cutaneous affections, or inflammation of the nasal or pulmonary mucous membrane) a feebly saline and strongly sulphurous water is called for, as that of Challes, France. The Red Sulphur Spring, Virginia, is greatly analogous to Challes. If, in addition, the spring contains iodine and bromine (as the Salt Sulphur Spring, Virginia), so much the better. Cooper's Well is also of this nature, but the additional peroxide of iron renders it particularly efficacious in gastro-intestinal affections. Old and inveterate scrofulous lesions (fistulas, necroses, tumeur blanche, fungous arthritis) do well at Barèges, and some of the West Virginia springs correspond pretty closely to the analysis of Barèges.

Sulphurous water is valuable in chronic bronchitis, and a sulphur water rich in sodium (as Eaux-Bonnes, Ems, Sharon) succeeds "excellently well" in laryngitis (Coan). For nasal and pharyngeal catarrhs the Rockbridge Alum Spring can be given as a spray.

Fine results are often obtained in children suffering from chronic suppurative otitis, blepharitis, ozæna, coryza, and amygdalitis from the use of Sharon water locally.

III. Gaseous or carbonated waters contain with the carbonic acid saline, earthy, or metallic matters (lime, magnesia, iron carbonates, etc.).

In their general application these waters are digestive, stimulant, laxative, diuretic.

Our leading springs of this class are the Saratoga, Ballston, Sweet, and Alleghany Springs, Virginia; Rockbridge, Alum, Capon, Buffalo Lithia, and Highland Springs, Lake County, California; Seltzer, Bar, Mont Dore, Nérès, and Vichy are gaseous springs.

Ballston Spring is to be chosen for atonic dyspepsias, while for acid dyspepsias the Saratoga, Capon, and Buffalo Lithia are preferable (Coan).

Gastric catarrhs call for a Glauber's salt, as found at Carlsbad, Marienbad, and Tarasp. Highland Springs, California, contain soda, lime, and magnesia carbonates, as well as large quantities of free carbonic acid and traces of silica, aluminium, and sodium chloride, resembling Vals, an admirable water for infantile dyspepsias, flatulence, and gastralgia.

Simon confesses to a repugnance for strongly-gaseous mineral

waters. Nevertheless, he orders them in obstinate nausea, disgust for food, and repeated vomiting, but with the proviso that their administration be continued no longer than one or two days.

It is in nervous diseases that carbonated waters are eminently successful. Nérès, in France, is famous for its cures of budding hysterias and chorea. Considerable caution should be displayed in the treatment of these infantile diseases, and it must be kept in mind that the careless use of mineral waters, douches, and sea-bathing do nothing more than aggravate all the nervous symptoms. One of the best methods in such cases is to begin with simple thermal hydrotherapy, modifying temperature and mode of administration according to susceptibility. Some children endure cold douches well, but in no case should these be prolonged longer than from three to ten seconds. Bromides, the valerianates, and arsenic may be combined with this treatment. Infantile and diphtheritic paralysis require the stimulating waters, with massage and the constant current.

IV. Ferruginous waters are among the more frequent springs, and hold their iron (carbonates, sulphates, or chlorides) in solution by excess of acids. The carbonated iron waters are generally weak, while the sulphurous are powerful. In their general application they are reconstituent and digestive. The most famous are Tunbridge Spa, Schwalbach, Mont Dore (ferruginous and arsenical), Provins' Forges; Oak Orchard, New York; Rawley, Virginia; Ocean Spring, Mississippi; Seigler and Harbin Springs, California; Stafford and Columbian.

These springs are of greatest utility in anæmia and chlorosis. One of the most famous in America is at Stafford, Connecticut, and is also, like the Oak Orchard Spring, New York, of peculiar efficacy in chronic diarrhœa, purpura, and passive hemorrhages. These waters ought to succeed admirably in summer complaint and in rectal prolapse. Oak Orchard Spring has a peculiarly good effect upon relaxed and ulcerated conditions of the intestinal mucous membrane. Saline chalybeates (as Warm Spring, North Carolina; Lenk, Switzerland) are successful in scrofula, ozæna, psoriasis, and hepatic enlargement.

In prescribing ferruginous waters the intestinal functions must be under continual surveillance, and this more especially if alumina be present. Cerebral congestion must be kept in mind as a possible contingency during their administration.

V. Arsenical springs are rare. No springs in Europe are more extensively patronized than the three leading arsenical ones, La Bourboule (also saline), Royal, and Mont Dore. At Ron-



cegno, Southern Tyrol, is a ferruginous arsenical spring, and Vichy has traces of this element. These springs are rare in America. They are indicated in scrofula, rheumatism, and humid dermatoses. Intermittent fever, and that extreme chloro-anæmia which often accompanies chronic impaludism in the child, resisting all the effects of quinine or cinchona, frequently meet in arsenic and hydrotherapy curative agents of the first order.

Phthisis of scrofulous children, nasal catarrh, chronic bronchitis, and enlargement of the bronchial glands are improved by arsenical waters, as are also articular and rheumatic troubles, and some forms of nervous diseases.

Dessau: The Value of Condensed Milk as a Substitute for Mother's Milk. (*Med. Rec.*, August 25, 1888.)

The writer endeavors to correct some of the false impressions entertained by city practitioners against the more general use of condensed milk as a substitute for mother's milk. He refers to the plain, or fresh variety, which contains no cane-sugar, that is served daily from the wagons. The objections to the general use of cow's milk are that, during the summer months, it is impossible to obtain it fresh and unadulterated in large cities, unless at a cost beyond the reach of the masses, and the difficult digestion of the casein by the delicate infant whose stomach has been damaged by an attack of summer diarrhœa.

In view of these deficiencies, he thinks there can be no valid reason against the more general use of the plain condensed milk, as a substitute for cow's milk, for infants living in large cities, when the manner of its preparation is more widely known. In the first place, it is impossible to adulterate condensed milk. The quality and purity of the milk employed in its manufacture is of the best. The milk is delivered under strict contract. This milk, obtained from a large number of cows, presents an average quality that renders it far preferable to the milk of one cow only. Contrary to the statements of some writers on this subject, no cream is removed from the milk before condensing. In the process of condensing, the milk is exposed for an hour or more to 210° F. of heat under pressure, which, according to Soxhlet, is sufficient to destroy any germs it might possibly contain, thereby rendering it practically sterile. The condensing process alters the casein in such a manner that it appears, when properly diluted thereafter, to coagulate in the infant's stomach more like the casein of mother's milk; that is to say, in light flakes, instead of the firm, hard masses into which the casein of ordinary cow's milk is sometimes seen to coagulate. The plain

condensed milk may be kept in an ice-box for from two to six days, which is long enough for all practical purposes. Compared with cow's milk, made sterile according to Soxhlet's method, it is far simpler, as the latter must prove complicated in its process of preparation in the hands of the ignorant and careless.

A not unimportant advantage in favor of condensed milk is the fact that it can always be diluted in any desirable proportion to suit either the age of the infant or the powers of its stomachal digestion. It is never known how much ordinary cow's milk has previously been diluted. In the writer's experience, a dilution of one part of condensed milk to sixteen parts of water is the proportion most easily digested, and it agrees in every way best with the young infant. After the age of six months he increases the condensed milk from one-half to double the quantity.

It is said that though a child thrives on condensed milk, if it becomes ill it loses fat rapidly. The author thinks this idea may apply to the preserved or canned condensed milk, which is only fit for use on ships and in armies; but as to the plain or fresh condensed milk, there are certainly no just grounds for such statements. The elements of nutrition are precisely the same as in fresh cow's milk; the amount of water is the same as it is commonly prepared; there is no addition of sugar, as is usually the case when fresh cow's milk is prepared for infants; and, finally, in a large observation of many years he has not witnessed such results.

He insists upon strict attention to the preparation of the condensed milk as a food for infants, irrespective of the season of the year. He directs a tablespoonful of the plain condensed milk to be added to a teacupful (equivalent to eight ounces) of water that has been previously boiled and allowed to cool to about 100° F., and a pinch of salt added. He prefers a graduated nursing-bottle; and instructs the nurse in regard to the proper care of the bottle and nipple, and regular intervals of feeding.

Pfeiffer: *Digestion in Children during Disease.* (*Jahrb. f. K.*, xxviii. 2.)

Digestion in its wider sense means the discharge of the digestive juices and their operation upon the food which has been taken, and also the absorption of the dissolved nutriment. In diseased states a third factor is introduced,—namely, the disintegration processes of the contents of the intestine,—a factor which is also present in the normal processes of digestion, but which plays so conspicuous a part in diseased conditions that

it often overshadows everything else, causing the chemical action of the secretions and absorption to assume less than their real importance. Observation of the contents of the stomach enables one to make a diagnosis of diseased conditions of digestion, the matter being removed artificially or coming away spontaneously, and also observation of the stools. It is not possible to inspect the effects of secretion and activity of the digestive juices, the disintegration of the contents of the intestine, and absorption throughout the entire intestinal canal. These three factors mutually influence each other everywhere, and each segment of the intestine is influenced by each segment which precedes it. In the mildest form of dyspepsia our only information is derived from the stools of the infant, no gastric symptoms being apparent, and the child showing only a slight degree of disturbance. The stools in such cases are thinner than usual, more frequent, and greenish in color. The general opinion in regard to the color is that it is due to an acid process in the intestine. Biedert says this change in color from yellow to green is caused by the conversion of the bilirubin which they contain into biliverdin, on account of fermentation and acid changes in the intestinal contents. But an objection to the statement that the green color is in any way caused by the organic acids of the intestine consists in the fact that if any of these acids are added to the fresh yellow evacuations of a healthy child, the color becomes more intensely yellow, even if there is an exposure to the light for days. Besides, nitric acid can color bilirubin intensely green, but this change does not continue long, and is followed by an intense yellow color. Seldom will concentrated nitric acid be found in the stools, which could cause such a change. The green color is never caused by the acids which are commonly found in the intestines, but it may be caused by the alkalis which are found there; thus a drop of a strong solution of sodium or potassium applied to fresh yellow stools will cause first a brown color, and then after some exposure to the light an intense green. Stools which were green when passed can never be turned yellow by acids, but are made yet more green, and the biliverdin separates from them in dark-green flecks. If green stools indicate that somewhere in the intestine there is excessive alkalescence, this fact may be made very useful. But it is well known that the reaction of the intestinal contents of the normal breast-fed child, throughout the entire extent of both large and small intestine, is acid, and alkalinity in any portion would be pathological. The reaction of the green stools is always either weakly acid or neutral. The green color may, therefore, be due to the fact that soon after the bile has entered the intestine it finds the



contents of the intestines so strongly alkaline that the bilirubin is converted into biliverdin; the stools having become green cannot be changed again to yellow. When, therefore, they are passed from the body with a green color and a sour smell, acidity is not the cause of the green color. That is due, if not to excessive acidity, to the fact that the stools are alkaline when evacuated, and that increasing alkalinity, which may arise from admixture with urine, may cause it. They might, therefore, be yellow when passed and subsequently become green.

Everything which makes the contents of the intestine more alkaline tends to produce green stools. The green color might be due to the fact that the hydrochloric acid of the gastric juice is not sufficiently active to acidify the alkaline breast-milk which is brought to the stomach in large quantities, and which also appears, in its changed condition, in the small intestine with a very alkaline reaction. The addition of alkalies to the food will result in green stools, as may be seen when bicarbonate of soda is added to the milk. In the treatment of incipient cholera and choleraic diarrhœa alkalies are, therefore, to be avoided in favor of acids, alkalies furnishing the best nutrient medium for the development of bacteria.

In addition to the slight grades of dyspepsia due to over-feeding with mother's milk there may be every degree of disordered activity of the gastric function. There may be a deficiency of acid to the gastric juice on account of the excess of food taken, or too little acid may be secreted, as in catarrhal affections of the stomach. The deficiency may be so great that the milk taken into the stomach may not be coagulated at all, and with this may be associated vomiting or eructation of offensive gas. If the contents of the stomach pass into the intestine in an alkaline or weakly acid condition, the addition of the alkaline secretions of the liver and intestinal glands only increases alkalinity, and renders the conditions extremely favorable for the development of germs. Abnormal processes of disintegration may now take great proportions, and displace every other function of the intestines. In the mildest forms of dyspepsia acid changes may still take place in the large intestine, and the bacterial proliferation and processes of disintegration be checked, though the stools will still retain their green color. This does not happen, however, to children who are fed on cow's milk. In cases in which destructive germs are present the processes may be so intense that the milk which has been taken into the stomach may be converted into a thin, bad-smelling fluid which shows no resemblance to milk. In other cases only the albuminates may suffer the abnormal pro-

cess, and the stools will have a fatty appearance and bad odor. If the quantity of fat is large, the stools will have a dirty gray appearance and foul odor. Such stools are passed more frequently by children who have been weaned than by nurslings. This form of fatty diarrhœa has been described by Demme and Biedert. The products of these abnormal processes are probably ptomaines and other harmful bodies. Resorption of these morbid elements takes place most frequently in connection with acute and chronic catarrh of the small intestine, and amyloid degeneration. If the mesenteric glands are diseased the resorption of fats will be interfered with. There is no interference with resorption in many cases, even if ascites is present, when there is stasis in the vessels of the intestine from heart-failure or cirrhosis of the liver. Resorption is seriously interfered with when there is acute or subacute swelling of all the glandular organs of the abdomen. In such cases children suffer from obstinate though not very profuse diarrhœa, from fever and emaciation. Liver, spleen, kidneys, and mesenteric glands may all be involved, and there may also be an effusion of greater or less quantity in the abdominal cavity. The stools are green or gray in color. The treatment should consist of calomel, cold applications to the abdomen, nourishing diet, quinine, and iron. This form of disease which has been described must not be confounded with simple intestinal catarrh or typhoid fever, while, on the other hand, its course is more favorable than that of mesenteric phthisis.

A. F. C.

Guelpa: New Method of Treating Diphtheria. (*Arch. di Patol. Inf.*, May, 1888.)

To the endless number of methods for treating diphtheria this author adds another which he has tested in a series of thirty-two cases, the report being read at a recent meeting of the Medical Society of Paris. The novelty of the method consists in the injection of perchloride of iron into the nares and fauces, the fluid being introduced into one of the nares and escaping by the other. The irrigation should be made with a pocket-syringe, beginning at the commencement of the disease, if the nares are not obstructed by false membrane, which would prevent the circulation of the fluid in the nasal cavity. This method would probably prevent the formation of false membrane, none having previously existed, or would destroy small portions already existing, would tend to favor the transformation of an anginose into a croupal diphtheria, and the ready secondary localization of the disease in the larynx and trachea. The conclusions which the author lays down are:

1. In the treatment of diphtheria cauterizations are often harmful, but may be advantageous; regular applications of caustic agents to the false membrane should be avoided.

2. Injections with five- to ten-per-cent. solutions of perchloride of iron have furnished the best results of any method of treatment in a large series of cases and at different epochs. These injections should be made as quickly as possible every quarter-hour during the day and every half-hour at night, though mild cases do not require such assiduous treatment.

3. While this treatment is being carried out the patient must be kept upon a milk diet as far as possible.

4. If in the course of the diphtheria secondary phenomena should present themselves, such as high fever, constipation, etc., these symptoms must not be overlooked, but must receive appropriate treatment.

5. Injections practised in the manner which has been suggested will afford the best preventive against the contagion of this disease (*i.e.*, used as a means of prophylaxis.—TR.).

6. Except in very rare cases the diffusion of the disease into the surrounding country may be prevented.

7. This plan of treatment is very easy of execution: it is easy for the patient, and easy for his physician and friends.

8. In some cases this method may readily be supplemented by other methods, such as the methods of Delthil, Geoffroy, and others.

9. It is quite inexpensive.

10. Trained assistants are not required; it can be carried out with certain precautions by almost any one.

11. It is also a good method of treatment for catarrhal, herpetic, and ulcerative anginas, and will, therefore, be useful in many cases in which the diagnosis is doubtful. A. F. C.

Warfwinge: Tubercular Meningitis cured with Iodoform Ointment. (*Arch. di Patol. Inf.*, May, 1888.)

Five cases of this disease were subjected to treatment of the kind mentioned in the title of the author's paper, and with gratifying results. Whatever errors there may have been in diagnosis, the author thinks it hardly possible that he could have erred in all five cases, though he admits that a differential diagnosis between tubercular meningitis and the less grave variety, during life, is very difficult. In all of the cases reported the plan of treatment consisted in first shaving the hairy scalp and then rubbing in upon the skin a quantity of ointment composed of one part iodoform to five of vaseline, the head being then covered with a tarletan hood with an opening for the face. At each daily friction two grammes of



this ointment were used, and the treatment was continued from nine to thirty-two days. Moleschott first advised the use of iodoform for internal diseases in 1878, and he successfully treated three out of five cases of tubercular meningitis by applications of iodoform collodion to the scalp. Nillseez and Souders have also each reported a successful case of this disease treated in the same manner.

The author offers the following suggestions based upon his experience in this connection:

1. Iodoform which does not contain less than 96.7 per cent. of acid is nearly insoluble in water and in blood-serum, and cannot penetrate the animal economy except through the medium of fatty substances with which it may be combined.

2. It is probable that when it is applied by friction it is received into the subcutaneous adipose tissue, which acts as a vehicle to its transmission. According to Binz, it is broken up, with the liberation of iodine, and this is absorbed and carried along by means of the organic fluids.

3. The iodine, in such cases, will act upon the protoplasm of the cells, both developing and destroying it.

4. This explanation will apply in regard to the treatment of tubercular meningitis by iodoform inunction; in accordance with which the free iodine would be carried by the lymphatics to the surface of the brain.

5. Whatever value be attached to any particular method of rubbing in the iodoform in tubercular meningitis in children, it would seem as if the subject were worthy of the serious attention of the profession.

6. Future experience may show that more rapid results may be obtained by some modification of this method than have thus far been reported. On the other hand, the prolonged use of iodoform is not followed by any accident.

A. F. C.

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## II.—MEDICINE.

Segournet: Athrepsia. (*Rev. Mens. des Mal. de l'Enf.*, June, 1888.)

Athrepsia is a morbid condition of infants which is characterized by disorders of digestion and nutrition, and results in defective or improper alimentation.

The most striking symptom in the physiognomy of an athreptic patient is emaciation. The child loses weight rapidly, and may lose as much as twenty or thirty grammes daily. Parrot divided the disease into several periods and recognized several degrees in the gravity of the disease. It frequently

begins at the end of the first week of life, the process of denutrition or innutrition being consecutive to that which existed at birth. If it is remembered that for the first few days after birth an infant normally loses thirty or forty grammes daily even with a good nurse, this loss being rapidly made up in the succeeding period, it is easy to understand how great the loss in vitality must be to infants who lose much more than that and then fail to gain correspondingly in the succeeding days. Such children may live from three to six weeks, being apparently at death's door all the time, and becoming more and more feeble and emaciated. In the grave form of athrepsia one may distinguish three periods,—one which is marked by the phenomena of indigestion and by green diarrhoea, a second which is marked by vomiting, muguet, erythema of the scrotum, the thighs, and the anal region, emaciation, and chilliness. If suitable food be given it is possible to restore the child even from such unfavorable conditions. The third period is that of cachexia, and is followed by death from exhaustion or from complications which intervene. The rapid form of athrepsia is the most common one, the child succumbing in three to six weeks. In the slow form the child may even gain weight in spite of bad hygiene, and may reach the age of several months, dying without complications. The author distinguishes an acute athrepsia from the rapid variety by the fact that in the latter the infant has never been able to profit by the food which was given him, while the other made irregular progress, the regimen being tolerated for a while, and then giving rise to gastro-intestinal disorder. The latter will die unless suitable dietetic changes are made, the former may be able to exist without much change of diet if he survives the gastro-intestinal attack. But a child who survives this bad usage is very likely to show the effects of it in his physiognomy, his bearing, his functions, and his nutrition. Such children become rachitic, have pulmonary or other serious troubles, their teeth appear late and are badly developed, and the individuals themselves usually die young.

The disease is easily diagnosticated. A child who does not digest at all or digests badly, and instead of improving emaciates and loses weight, or gains very slowly, has athrepsia. Vomiting and diarrhoea are not the only symptoms, for such symptoms are present in simple enteritis or in gastro-intestinal disease, or in infantile cholera, for these are accidental conditions resulting from errors of diet, from heat, and indigestion. The digestive troubles in athrepsia are the expression of a morbid state which is brought about by a defective regimen. In order to thrive an infant should gain twenty to thirty

grammes in weight daily for the first four months of life. If he gains less than that, his condition may become a serious one at any time.

The lesions in athrepsia are those of violent gastro-enteritis, ulcerations, ecchymoses, softening and granular infiltration of the mucous membrane of the digestive tract. Finally, there are thromboses, interstitial hemorrhages, and steatosis of the kidneys, lungs, liver, and brain, all of which indicate an acute or chronic inflammation of the digestive tube, and the trophic disorder which accompanies the final cachexia.

The mortality from this disease is very great. In the author's district, which includes a population of four thousand, about one-third of the deaths under one year of age, and one-seventeenth of the total number of deaths, were from this cause during a given period. All the infants were bottle-fed. The statistics of the entire city of Paris were even more astonishing, for there nearly two-thirds of the infants are bottle-fed.

A. F. C.

Joal: Epistaxis dependent upon the Influence of the Genital Apparatus. (*Rev. Mens. des Mal. de l'Enf.*, June, 1888.)

Recent authors, especially Zuckerkandl and Kiesselbach, have described, in place of the varicose venous plexuses of the nasal mucous membrane which used to be recognized as such, a true erectile tissue, or *corpus cavernosum*, which is situated immediately under the epithelium of the nasal membrane. In certain individuals this erectile tissue has a great tendency to become turgescient, and even to be the seat of hemorrhages under the influence of direct irritation or of psychical impulses. Epistaxis of the latter variety is very apt to be confounded with the so-called essential hemorrhage which is of such frequent occurrence at the period of puberty, and upon the development of which the influence of the genital apparatus has a decided bearing, in the author's opinion. He insists upon the physiological relations which have long been admitted to exist between the nose and the genital organs. These relations have been demonstrated by John Mackenzie, Ischwall, and Arviset, and have been confirmed by numerous curious phenomena which have been observed by Van der Wiell, Elsberg, Tilly, and Moure, among which may be mentioned the attacks of sneezing which are excited in some individuals by sexual intercourse, and sneezing, weeping, and dyspnoea which have been reported in the case of an asthmatic individual under the same circumstances.

Pituitary phenomena attributable to the same cause have



also been observed in certain women at the time of their monthly periods, these phenomena consisting in obstruction of the nose, with profuse nasal discharges, and sneezing, and in addition cough, migraine, asthma, swelling and redness of the skin of the nose, and vertigo, all of which point to turgescence of erectile tissue. The author has successfully treated with the thermo-cautery a patient affected with stoppage of the nostrils, periodic frontal neuralgia, sneezing, and an abundant nasal secretion, which was sometimes accompanied with nausea and vomiting. All nasal affections, including coryza, seem to be influenced by morbid conditions of the genital organs, and may be relieved by suitable treatment of the latter. Attention is also called to the chronic nasal catarrh, with purulent discharge and perversion of the sense of smell, which sometimes affects persistent masturbators. The nose-bleed which is so common in young girls at the time that menstruation is established is cited as a further proof of the interdependence of the genital apparatus with the nasal mucous membrane. Cases are also narrated in which young girls who masturbated suffered from nose-bleed after indulgence in the vice.

A. F. C.

Descroizilles: Simple Pleurisy with Slow Recovery in a Small Boy. (*Rev. Mens. des Mal. de l'Enf.*, June, 1888.)

The details of the case were followed by remarks, of which the following is an abstract:

If thoracentesis does not suffice for a child who has suffered from pleurisy; in other words, if the patient remains weak from long-continued fever or persistent diarrhœa, and becomes cachectic, the same operation as is indicated for empyema will be required. The same operation is also required for those cases in which the fluid withdrawn by puncture is very fetid. The foregoing applies to cases which are presumably cases of simple pleurisy, and in which the intense fever, the great prostration, and the evidences of pus within the pleural cavity are wanting. If empyema is not present, and there seems to be any possibility of the absorption of the effused fluid, one should desist from the cutting operation; some of the disadvantages of which in children under seven or eight years of age are that the intercostal spaces in such children are often too narrow to admit of the satisfactory use of drainage-tubes, and the frequent dressings which are required become very irksome and tedious to them. The operation of thoracentesis is much more appropriate for childhood. If the effusion is not very great, and the cavity which contains it is divided by adhesions, puncture with aspiration are sometimes ineffectual. In such cases

one must resort to vesicants, to tincture of iodine, to purgatives, to diuretics, and to diaphoretics. Should puncture be only moderately successful, or even without good result, it can never be harmful if made with suitable precaution. It is only in cases in which suitable care has not been exercised that puncture results in the conversion of a serous into a purulent effusion. If pleurisy in a child is not accompanied by any particular pain in respiration, trouble in the central circulation, or displacement of the heart, if the accompanying febrile movement is moderate, it is useless to resort to very active therapeutic means. Puncture, in such cases, is not only not indispensable, especially if one is uncertain as to the quantity of fluid effused, but it is not even necessary to resort to phlebotomy, which Ziemssen and others have recommended in the presence of pronounced dyspnœa.

A. F. C.

Genser: *The Pathology and Treatment of Whooping-Cough.* (*Rev. Mens. des Mal. de l'Enf.*, June, 1888.)

The author relates in his paper the results which he has had in the treatment of this disease among two hundred patients. Two methods of treatment were used, one being that of Michael, and consisting in the insufflation into the nasal fossæ of medicinal powders, the other consisting in the use of antipyrin by the mouth. Michael's method was tried in seventy-six cases, powdered benzoic acid being insufflated through a glass tube. The results were only moderate, as shown by the tracings indicating the number of paroxysms during the twenty-four hours. The average duration of the treatment was forty-three days, and in many cases the only perceptible benefit consisted in the cessation of vomiting which was brought about.

As a general thing the treatment caused a good deal of excitement on the part of the patients, sometimes precipitating a violent paroxysm of coughing.

On the other hand, antipyrin given by the mouth was usually more efficacious. In all the author's cases it not only diminished the daily number of paroxysms of coughing, but also their duration and their intensity. In the majority of the cases the duration of the treatment did not exceed twenty-four days. The average dosage was ten centigrammes daily for each year of age, given in a sufficient quantity of water and syrup. In five of the cases which were complicated with pulmonary lesions the antipyrin had no perceptible effect. The favorable effect of the drug upon the whooping-cough is probably due to its power in diminishing reflex excitability. It is not asserted that it is a specific in its action, but it is certainly not less serviceable than many of the drugs which are used in

treating this disease, and it is readily tolerated by the stomachs of children.

Acetanilide was also used by the author, but the results which it gave were much inferior to those which were obtained by antipyrin.

A. F. C.

Valude: Scrofulous Ophthalmia following Rubeola. (*Jour. de Méd.*, April 1, 1888.)

Trousseau has recently shown that there were certain inflammatory conditions affecting the external portions of the visual apparatus which occur in connection with or consequent upon rubeola; that convalescence from rubeola might serve as a pathogenic factor which was favorable to the development of certain scrofulous affections of the eye, such as phlyctenular conjunctivitis, erythematous or eczematous blepharitis, and pseudo-membranous and diphtheritic conjunctivitis.

There is, besides, another form of scrofulous purulent ophthalmia which is due entirely to infection from rubeola, and this was first defined by the author in 1884. It may be described as follows: There first appears, in a scrofulous, lymphatic subject, a simple or phlyctenular conjunctivitis, and this serves as a premonitory phenomenon. Next the lids are hard, infiltrated, and swollen as in ocular diphtheria. The secretion is scanty and sero-purulent in character. The disease usually occurs in the few weeks which follow the evolution of rubeola. It must be differentiated from ocular diphtheria, from ordinary purulent conjunctivitis, and from the purulent ophthalmia of the scrofulous described by Galezowski. The last two diseases are remarkable from the intensity of their reactionary phenomena and the quality of the secretion, which is true purulent matter; besides, treatment by caustics will be effective in the latter, while it is entirely contraindicated in the scrofulous ophthalmia which follows rubeola.

A. F. C.

Disse and Tagenti: The Contagium of Syphilis. (*Arch. f. Kinderh.*, ix. 4 and 5.)

The authors believe that they have succeeded in finding the contagium of syphilis, their belief being founded upon certain experiments which were carried out in accordance with all the rules of modern bacteriological investigation. They succeeded in cultivating a definite diplococcus obtained from the blood of syphilitic patients in different stages of the disease, and by inoculation of animals with pure cultures succeeded in producing in them a condition of disease which they believed to be identical with syphilis as it appears in human beings. Fifteen animals were inoculated, all of them with positive results. Of



these, two bitches carried their foetuses to maturity, the latter died soon after birth, and were carefully examined. Three bitches and one rabbit were killed while pregnant, the foetuses being also subjected to careful examination. It is interesting to note the differences in the occurrence of acquired syphilis in men and in animals. The syphilitic poison produces a multiple disease of the vessels in men as well as in animals, but the anatomical systems, of which the vessels are diseased, differ. In animals the vessels of the skin are not implicated, while those of the heart, lungs, and kidneys are. In men diseases of the vessels of the skin predominate, the arteries of the brain are frequently involved, but those of the intestines are seldom involved. The simple interstitial, chronic inflammatory processes in the liver and lungs occur as the consequence of syphilitic infection both in men and animals. New growths with the character of granulation-tissue also occur in animals, but less frequently than in men. The lymph-glands are swollen, especially in the larger animals, but in the author's investigations they showed nothing peculiar, with the exception of a cellular hyperplasia; neither could cocci be found in them. In the foetuses of infected rabbits changes were found in the lungs and in the hollow long bones. The connective tissue around the vessels of the lungs was hyperplastic, being tender, rich in cells, with fine fibres and an abundant ground substance. The embedded cells were spindle-shaped. Along the bronchial twigs there was a much thinner layer of similar connective tissue. The septa between the alveoli were broad and infiltrated with round cells. The changes in the bones of the foetal rabbits resembled those which Wegner described as characteristic of congenital syphilis (in human beings). The changes in the lungs were also similar to those which are found in congenital syphilis. In the hollow bones diplococci in great numbers were found. Very extensive disease of the organs was also found in the young of the three bitches. The changes in the circulatory apparatus were not of such great importance, but those of the respiratory organs were exceedingly significant. The lungs were almost white, hepatized, and there were groups of emphysematous alveoli under the pleura. The surface of the sections made in the lungs was quite smooth. Around the larger bronchi and around their vessels a soft connective tissue was developed. The alveolar septa were broad as a result of cell infiltration, the lumen of the alveoli was irregular, in many places, especially under the pleura, no proper alveolar structure was to be seen; instead there were accumulations of round cells. In the alveoli were epithelioid cells, which, in some cases, completely filled the lumen. At certain yellowish spots

in the alveolar spaces and the infiltrated septa fatty degeneration had begun. Where the degeneration was most extensive the lung-tissue appeared quite compact, the remnant of the exudate in the alveoli appearing as a finely-granular mass, in the alveolar septa as a net-work of striped tissue in which cells were embedded here and there. In the connective tissue accompanying the bronchi and the vessels occasional diplococci were found. In the liver there was connective-tissue hyperplasia with accumulations of cells; there were also gummata, and plenty of diplococci. In the hollow bones the limit between the cartilages and the marrow spaces had a wavy appearance, the marrow looked like granulation-tissue, and the osteoblasts were wanting. In the cranial bones were round depressions, which were caused by defects of the *tabula vitrea* and the diploë; the dura mater also was thickened. The ribs showed changes similar to those of the hollow bones. The spleen was enlarged, compact, and anæmic, the tissue being converted mainly into granulation-tissue. The intima of the small arteries and the walls of the veins were thickened. The kidneys showed no changes of importance.

The changes described in the foregoing correspond exactly with those which are found in syphilitic children.

Hochsinger has taken a stand against the existence of this microbe of syphilis as such. He has found the coccus described by the authors, but believes that the diseases in newborn infants described as osteochondritis, syphilitica, pemphigus syphilitica, and pneumonia alba are directly due to the presence of streptococci in the diseased tissue, and that these are pathogenic for the diseases mentioned.

Chotzen regarded the streptococci as only of accidental occurrence, and not pathogenic of syphilis at all. A. F. C.

**Kartulis: The Etiology of Egyptian Dysentery.** (*Arch. f. K.*, Bd. ix. H. 4 and 5.)

The author was induced to make his investigations from the fact that when Koch was in Egypt in 1883, during the cholera epidemic, he found in sections from the intestines of individuals who had died from dysentery a variety of amœba. He (Kartulis) demonstrated the presence of living amœbæ in the intestinal evacuations of those who were sick with diarrhœa, and found them either living or dead, according to the time of the investigation and the intensity of the disease, in the evacuations of over one hundred and fifty cases of dysentery during investigations which continued two years. In five cases the amœbæ were accompanied by many monads. In a series of control experiments the amœbæ were found in no cases except those

of dysentery, but they were found in every case of undoubted dysentery. In 1859, Lambl, at Prague, also found amœbæ in the intestinal mucus of a child who had died of dysentery, and Sonsino, at Cairo, has made similar discoveries. Lösch, at St. Petersburg, has also found amœbæ in a case of intestinal inflammation, but it is not known whether they were identical with those found in dysentery in tropical countries. In looking for these amœbæ in intestinal discharges a high magnifying power (one-twelfth immersion) is required, for the bodies are tender, transparent, and fluid. They contain in their plasma a nucleus and vacuoles and numerous refracting granules. The vacuoles, as many as ten of which may be in a single amœba, are barely perceptible when the amœba is in motion. They do not take coloring-matters, and so are perceptible by contrast with the stained nucleus and plasma. Processes from the amœbæ stretch themselves out in varying number and rapidity as the animals move about, and the granular matter shows a dancing movement. When at rest the amœbæ are usually round in form. To see the amœbæ in sections, freshly-prepared tissues must be taken in which they are most numerous. They are colored with alcoholic solutions of methyl blue and gentian violet, and are located in the submucous tissue at the base of the ulcerated portion and in the borders of the same. They are also found between the dead epithelial cells of the mucous membrane, and have even been found in the muscular coat of the intestine. The author has not been able to cultivate them artificially. They are killed by very weak solutions of antiseptics and also by the urine. Nitrate of silver, boric acid, and quinine in solution in the form of enemata produced the best results in Egyptian dysentery.

A. F. C.

Bender: The Relations of Lupus Vulgaris to Tuberculosis. (*Arch. f. Kinderh.*, iv. 4 and 5.)

From a pathologico-anatomical and etiological stand-point it is not yet accepted that lupus vulgaris is a tuberculous process, but in a clinical sense the two processes are quite similar, and the great mass of literature upon the subject seems to encourage the idea of their resemblance, if not their identity. The author's views are based upon the study of one hundred and fifty-nine cases, in ninety-nine of which he found tuberculous or scrofulous or other elements which were attributable to the influence of the tubercle-bacillus. In twenty additional cases there was a history of previous tubercular lesion or of inherited tendency to tubercle. Among the opponents of the relationship of tubercle and lupus may be mentioned Kaposi, but the theories of this and others writers upon the subject can hardly



be said to be convincing when compared with the positive results of clinical investigation such as are furnished by the author of this paper.

A. F. C.

Lorez: *Dyspepsia in Young Children.* (*Arch. di Patol. Inf.*, July, 1888.)

Epotius recommended irrigation of the stomach in 1863; this practice has been carried out by the author for several years, and he has formulated rules concerning the indications for irrigation of the stomachs of children. This should be practised in such a way as to produce as little disturbance as possible with the food that is in the stomach. The plan was tried by the author in eighteen cases of acute or chronic dyspepsia; one of the patients being also affected with severe capillary bronchitis. This disease is not a contraindication to irrigation; in fact, the removal of the bronchial mucus from the stomach is beneficial rather than otherwise. The author habitually used for the operation an English catheter, No. 11 or 12, which could be introduced without any difficulty. The rancid or acid contents of the stomach sometimes obstructed the orifice of the catheter, but by injecting the water slowly and in small quantity all the contents of the stomach were gradually removed. In some cases it was found desirable to lower the child's head for the more ready exit of the fluid. In very few cases was this treatment continued beyond the eighth day. In the majority of cases a single irrigation was sufficient to check vomiting and prevent its recurrence. After the irrigation the children became quiet, willingly took nourishment, the stools were no longer diarrhœal, the general condition improved, and the weight increased. The irrigation may be practised once daily, if necessary, two or three hours after the first meal or nursing. After a few days of such treatment the author gave in addition the tincture of the perchloride of iron and glycerin. If the reaction of the stomach were acid, bismuth was given, and to children who were old enough, an extract of beef and sherry wine.

A. F. C.

Ashby: *The Relations between Scarlet Fever and Heart-Disease.* (*Jahrb. f. K.* [abstracted], xxviii. 2.)

This paper is based upon an analysis of nine hundred cases of scarlet fever which were treated in the Children's Hospital at Manchester, England, during the five years previous to 1886.

The question of the relation between scarlet fever and rheumatism first comes into prominence. A simple scarlatinal synovitis was recognized, which had nothing to do with rheumatism, was usually of short duration, seldom attacking a joint twice, usually appearing on the seventh to the ninth day of the dis-

ease, and showed a preference for the synovial membranes of the hand, finger, foot, and cervical vertebræ. It almost always occurred after a long period of fever, after suppuration of glands, or necrosis of the pharynx. Endocarditis seldom occurred with this form of synovitis; pericarditis and pleuro-pericarditis were observed in one case.

Differing from this form of synovitis and difficult to be distinguished from true rheumatism is a joint affection which, like nephritis, comes at the end of the third or fourth week, and oftener in young adults than in children. This form of scarlatinal rheumatism is usually complicated with endocarditis. In three cases of articular rheumatism which acquired scarlatina while in hospital, pericarditis supervened after the scarlatina had lasted a week, and death resulted in all of them. Pericarditis is not of common occurrence with simple cases of scarlatina. Sometimes pericarditis and pleuritis occur in connection with suppurating glands of the mediastinum, or pericarditis may be the evidence of pyæmia in connection with a severe case of scarlatina. Endocarditis alone seldom occurs with scarlatina. In more than one hundred autopsies upon those who had died from scarlatina, it was not found in a single case unassociated with nephritis.

The friction murmurs which are so often heard in scarlatina must, therefore, be regarded as evidence of functional disorder of the pericardium. Pericarditis and endocarditis are most frequently seen during the second or third week after scarlatina, and then in conjunction with pain in the joints. Endocarditis often occurs in connection with scarlatinal nephritis, but its presence is often masked until the presence of emboli renders a diagnosis possible. In some of the author's cases vegetations upon the valves had been diagnosticated, but the autopsies showed that there was only dilatation. Myocarditis in the form of fatty degeneration of the muscle-bundles, with mottled appearance of the endocardium, was frequently seen, but in no case was there a leathery condition or induration of the heart-muscle observed. Dilatation and hypertrophy of the heart were observed only occasionally with nephritis, and the degree of compensatory hypertrophy seemed to depend upon the duration of the disease and the condition of nutrition of the patient. While dilatation of the heart may take place in a few days, it is equally true that the heart will quickly resume its normal proportions after a nephritis has been recovered from. In many of the cases death came within a few hours after the attack of heart-trouble, with dyspnœa, pallor, vomiting, and great restlessness. Dilatation was prone to involve all the cavities, though the left heart was especially involved.

A. F. C.

Ekkert: The Question of Albuminuria with Fever in Childhood. (*Jahrb. f. K.*, xxviii. 1.)

The object of the author's work in connection with this paper was (1) to agitate the question, by a series of investigations of the urine in children, as to the relation of the organism of children in different diseased conditions to the changes from the normal condition of the urine; (2) to seek clinically, at least approximately, to determine the loss of albumen to the organism in connection with the albuminuria of fever. The material included one hundred hospital cases, of which thirty-one were cases of acute infectious disease, seven being cases of petechial typhus, nineteen of typhoid, two of recurrent, and two of intermittent fever. The urine was examined as to its daily quantity, color, specific gravity, the quantity of its phosphates and its albumen, if any. The albuminuria continued two to three weeks in one case of petechial typhus and in three cases of typhoid; from one to one and one-half weeks in four cases of petechial typhus and three of typhoid; during several days albumen was found in six cases of typhoid, and during one day in two cases of typhoid.

A study of all the cases showed that,—

1. Albuminuria in typhus and typhoid fevers is a very common phenomenon, occurring in three-fourths of all children who have these diseases.

2. Albuminuria occurs most commonly during the first week or even during the first days of the disease.

3. It is difficult to define the normal duration of albuminuria; it probably averages one to one and one-half weeks.

4. The frequency of albuminuria in typhus and typhoid and the quantity of albumen discharged bear close relation to the intensity of the febrile condition and the duration of the period of fever.

A certain number of cases of acute exanthematous diseases were also studied with reference to the relation of albuminuria to them, these being diseases in which the kidneys are most likely to be implicated, especially when they occur among children. Of the group of cases studied two were measles, two of diphtheria, and fourteen of scarlet fever, with secondary parenchymatous nephritis in different stages of development. The conclusion concerning these diseases was that the occurrence of acute eruptions is usually attended by febrile albuminuria, the intensity and duration of which depend entirely upon the intensity and duration of the accompanying fever. The albuminuria is generally of brief duration and has no particular prognostic significance. In the third or fourth week after scarlet fever a kidney affection usually ap-



pears, without oedema or general disturbance, but with albumen, which gradually increases to a maximum and then as gradually diminishes until it disappears. Fever is likely to be present when the albumen first appears. The prognosis depends upon the degree to which the kidneys are implicated.

A. F. C.

Lennander: Studies concerning the Relation between Croup and Diphtheria. (*Jahrb. f. K.*, xxviii. 2.)

The relation between croup and diphtheria was investigated by the author, by carefully finding out, whenever a case of croup came to his notice, whether cases of diphtheria had also occurred, either previously or subsequently, in the same house or in the neighborhood. In this way he was repeatedly able to connect a case of croup with cases of diphtheria. In all cases in which he tracheotomized for croup, and in which there was no deposit upon the pharynx, he was either able to demonstrate with positiveness a relation to diphtheria, or to show that it was highly probable. In the greater number of cases it was believed that secondary croup also depended upon diphtheria. It has not yet been demonstrated that catarrhal laryngitis in the course of measles, scarlatina, whooping-cough, and other infectious diseases can pass into a pseudo-membranous inflammation without association with the contagium of diphtheria, but it is quite possible that these catarrhal inflammations in the pharynx and air-passages make one quite susceptible to the contagium of diphtheria. Phenomena resembling croup have been observed as the result of caustics and foreign bodies in the air-passages. The author does not believe that fibrinous croup can begin with so-called pseudo-membranous attacks, being followed by intervals in which there is complete freedom from membrane, but rather that in such cases there is catarrhal laryngitis at first which is followed by infection.

Pseudo-membranous laryngitis without symptoms of stenosis and catarrhal laryngitis with symptoms of stenosis are sometimes undistinguishable clinically from fibrinous croup. The conclusions are that the group of symptoms in croup neither belongs to one definite disease etiologically, in an exclusive sense, nor, in an exclusive sense, to a definite anatomical condition of the mucous membrane of the larynx, nor to catarrh, nor to diphtheria. All these changes in the larynx may lead to symptoms of croup, but they may also continue without the latter. Croup symptoms occur in most of the infectious diseases, but they may be due to other causes than infection, such as cold, mechanical, chemical, or thermic irri-

tants. The four forms of croup which the author recognizes are (1) mild catarrhal, or pseudo croup; (2) severe catarrhal, or inflammatory croup; (3) fibrinous croup without apparent indication of general diphtheritic infection; (4) fibrinous croup with evidence of general infection.

A. F. C.

Tschernoff: Investigations with the Dried Substance of Fæces regarding its Proportion of Nitrogen, also concerning the Variations of the same in the Excrements in Relation to Nutrition and the different Diseases of Childhood. (*Jahrb. f. K.*, xxviii. 1.)

The following conclusions resulted from the author's investigations:

1. The percentage of nitrogen in the fæces of healthy children nourished at the breast, as well as of those nourished on cows' or asses' milk, with and without the addition of carbohydrates, is nearly constant, though in the latter it is slightly higher than in the former. It is more probable that this condition depends upon the greater facility of assimilation of the woman's milk than upon percentage differences in the constitutive elements of woman's and animal's milk.

2. The percentage of nitrogen in the fæces is lessened in disease, this being especially noticeable in the dyspeptic diseases in consequence of the simultaneous excessive discharge of fat. As this disappears in the course of recovery so the percentage of nitrogen in the evacuations increases.

3. When the nutriment is changed the percentage of nitrogen at first becomes greater, this being due in such cases to the fact that metabolism is more perfectly accomplished than it was previously.

A. F. C.

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### III.—SURGERY.

Barker: Tubercular Joint-Disease, and its Treatment by Operation. (*Brit. Med. Journal*, June 9, 16, and 23, 1888.)

The author has brought together the results of wide observation and extensive research. He regards as established the identity of *tubercular* joint-diseases with those formerly classed as *scrofulous*. The first step towards this view was the recognition of the fact that tuberculosis in internal organs was a well-defined disease, producing definite tissue-changes.

The results of the latter in their earlier stages were the formation of peculiar bodies with a recognizable structure in any tissue of the body.

Differences in these bodies were soon seen to be due to the stage of growth in which they were examined. It was noticed that patients in whom these deposits could be demonstrated in the lungs became affected similarly in other parts, and that these parts underwent identical degenerative changes in the course of time. Then came the recognition of the fact that the offspring of such patients were peculiarly prone to chronic joint affections. Further, that in these chronic affections of the joints characterized as "scrofulous," the ultimate results of the tissue-changes were the production of caseous foci identical with those known as tubercular in the lung.

Again, in apparently primary scrofulous joint-disease, it was observed that, sooner or later, the lungs, brain, intestines, or kidneys became affected with typical tubercular disease. Ultimately microscopic study revealed the fact that the initial lesion of joint scrofula was histologically the same as that of lung tuberculosis.

Although all these facts seemed to point very clearly to the identity of scrofula and tuberculosis, it was not until the discovery of the bacillus tuberculosis and its demonstration in the initial lesions of the two affections that positive proof was actually forthcoming.

Experimental research soon showed that no substance not containing these organisms could produce the disease in question in healthy animals; and, on the other hand, inoculations, with due precautions, of substances in which they were present invariably produced the disease.

The result was practically the same whether the tissue from which the inoculations were made was taken from a scrofulous joint or a typically tuberculous lung. And here the author thinks we have the identity of the two diseases, tuberculosis and scrofula, established.

From his observations of experiments on animals the author concludes that the bacilli first increase in the inoculated part; then permeate the granulation-capsule which has formed about it; and finally spread to the adjacent tissue. In the latter they spread chiefly along the fresh scar tissue,—a fact of much importance to the operator.

In the tissue in which the parasites have penetrated there are seen to be groups of certain newly-formed cells, which eventually become tubercles. No tubercles are found in the tissue free from bacilli. In regard to the effect of inoculated tuberculosis in man, we have the evidence of numerous accidental inoculations recorded during the last few years. The results observed have been identical with those obtained from experiments on animals. It is evident that the disease so



induced may manifest itself locally before becoming general, and may remain localized some time. It is also clear that its tendency to become general varies directly with the number of the specific organisms present at the original point of inoculation. If the body be healthy, these bacilli may be arrested in their growth and development until eliminated or destroyed; but if the vitality of the part be low, they have a great tendency to multiply and spread.

It has been proved that tuberculous disease is auto-inoculable.

The introduction of the poison at one spot does not give immunity from inoculation at another. The importance of a full recognition of this point cannot be overrated in the operative treatment of tubercular joint-disease.

The author's conclusions in regard to the methods of introduction of the poison are: first, atmospheric contamination; secondly, infection through the alimentary tract by swallowing material containing the bacilli,—particularly milk.

He does not consider tenable the theory that tubercular disease is inherited in the parasitic form; but that instead they inherit the predisposition, and thereby become a fruitful soil for the propagation of tubercle, if implanted on them.

The author believes that the bacilli are disseminated, first, by locomotion; second, and by far the most frequently, they are primarily taken up by the lymphatics, and pass from these into the blood-current, to be carried by the latter secondarily into distant parts of the body; third, they are poured directly into the general circulation from a caseating focus of tubercular disease. The author thinks that a knowledge of this fact ought to have an important bearing on the operative treatment of tubercular caseating foci.

It is very easy to understand how easily surgical interference may give rise to this mode of general infection when we remember the constant pressure of dilated thin-walled veins around the walls of caseous abscesses, and the ease with which they may be torn. The rough handling of a tubercular joint, even without any cutting operation, may complete the rupture of a vein already partly eroded by its proximity to a caseating process, and thus permit the tubercular products to enter the general circulation.

It has been often observed that rapid general tuberculosis has followed a disturbance of a tubercular joint either by injury or surgical interference. But the lymphatics are the ordinary carriers of the microbes from their first landing-place. It is fortunate that this is so, for the lymphatic glands in a large proportion of cases have the power of arresting them

until they die or in some way have their dangerous powers curtailed. If they once enter the blood they are carried to every part of the system, and can select one or more spots specially suited, either physiologically or pathologically, for their propagation. Injury to a part undoubtedly predisposes it to tuberculosis; whether this injury consists in tissue degeneration with extravasation of blood, or disturbance of function, or impairment of vitality, is not known.

Besides the influence of external agencies in predisposing to tubercular growth, there appears to be in certain parts some inherent suitability of soil where the bacillus appears to prefer to make its home.

It is known that the disease affects primarily the synovial structures or the cancellous tissue of the bone, however deeply it may ultimately involve the other parts.

If the specific poison is circulating in the blood the characteristic foci will be found where the vascularity is greatest. In those with the predisposition, tubercle will manifest itself where the vitality is lowest.

The reason for the disease being more frequent in the young is thought to be because the vitality of the young cells is lowest, and approaches more nearly the embryonic type at the spots where growth and physiological activity are greatest, as in the synovial structures and medulla of the ends of growing bones.

It may also be that young growing tissue, being more vascular, physiologically, requires but little to convert it into a pathological congestion.

The author concludes from his observations that tubercular disease starts more frequently *in the bone alone in childhood, and in the synovial structures alone in adult life.*

He believes that the initial lesion is found as a focus of hyperplasia, with caseation at the lines of most active growth,—i.e., between the epiphysis and diaphysis.

The bearing of this fact upon the question of early conservative operation on the ends of bones versus later and more complete excision of entire joints is obvious.

Finally, there is the predisposition of external injury. This may cause a plastic exudation resembling embryonic tissue. This seems to have little power to resist the attacks of these organisms. Injury may increase the blood-flow, and so increase the supply of bacilli; or it may cause a passive congestion and give the bacilli better opportunities for deposit. There may be extravasation of blood with bacilli; and in a state of rest they meet with favorable conditions for growth.

Tubercular disease may remain localized in a joint for a long time. On the other hand, it is within the experience of many

that after a long period of quiescence as a local affection tuberculosis has rapidly become general. This usually follows some injury to a fully-developed caseating focus, or the rupture of an abscess, or a surgical operation upon a tubercular part.

A study of reports of operations upon tubercular joints suggests strongly that surgical interference is sometimes the exciting cause of the generalization of the disease.

As long as the limiting layer of plastic exudation remains undisturbed there is an obstacle to the dissemination of the organism. If this is destroyed, generalization of the disease results.

We are all familiar with the rapid swelling of the neighboring glands which often takes place when a scrofulous joint has received a fresh injury. After operations, also, we see the same if, unhappily, the wound suppurates, thus stimulating both absorption and destruction of the limiting layer of granulation-tissue. In many cases, also, the specific virus is probably taken up by the radicles of the vein wounded by the operation.

There is, therefore, considerable risk of producing a general infection by operating on a tubercular joint.

It is only by a study of cause and effect that we may learn to avoid or reduce the dangers to such an extent that they are outweighed by the benefits of operation.

An early diagnosis gives us the option of treating by operation or otherwise from the start. We can determine if it is primary or a local manifestation of a general condition. If an early diagnosis is made we may make use of other than operative measures.

By attention to hygiene the vitality of the part may be increased. By rest and protection from violence and varying temperature the tendency of local infection to spread may be restrained. Operations should be done when liquefaction of caseation occurs. It will then be done relatively early. If the surgeon waits for suppuration he will interfere relatively late and with all its consequent disadvantages.

If the risk of generalization is recognized the surgeon will operate early, removing the tissue as thoroughly as possible, and secure union by first intention.

In undertaking any operation we should not only go wide of the disease, but do so with as little violence as possible to the surrounding tissue. This last point is important, for by its recognition we may avoid reinfection.

The dangers connected with the operation are septic infection of various kinds. These are, happily, very rare if all the improvements of aseptic treatment are observed.

*Advantages of early operation.*—The author next considers



the methods of treatment of tubercular joint-disease by operation. He believes that in the case of the joints of the extremities the choice lies only between early excision, partial or complete, and amputation.

The practice of excising in advanced cases cannot be too strongly deprecated. The author holds that it is late operations by excision that have so fearfully swelled the mortality hitherto. There are dangers of generalization in opening abscesses and scraping out sinuses.

The author says that the conservative surgery of the future should recognize the disease early, and if it be advancing in spite of treatment, attack it by early and free operation. As long as there is no distinct evidence of caseation in tubercular joints so long may we treat them by other means. When caseation has commenced and is advancing we ought to operate, except in cases where the internal organs are involved. The author believes that improvement in the result of operation will be slow until some such rule is adopted.

*The use of iodoform.*—Of the various germicides, iodoform is the only one in which there seems to be a growing belief that we possess a powerful agent for the destruction of the bacillus tuberculosis.

From his experience the author regards the free use of iodoform in dressing wounds made in operating upon tubercular joints one of the most important advances of late. There is also enough evidence to encourage the use of the iodoform and glycerin emulsion, by injecting it into the cavity of a cold abscess after the contents have been removed by aspiration. This method of treatment should not be persisted in if the disease advances in spite of it. In every case the author would forestall the bursting of an abscess, and operate.

Although there may be an evening rise of temperature, occurring regularly, and evidence of fluctuation, there is still doubt as to how far the disease has affected the tissues of the joint, and a question, therefore, whether excision or a more limited arthrectomy will be required. In these cases the author believes that it is fully justifiable to make an exploratory incision into the articulation in order to investigate the actual condition of things.

Guarded by antiseptics the risks are small. The gain is great whether we suspect bone or synovial disease. The difficulty in determining the exact stage of the disease, and its primary seat in a joint, is one of the chief obstacles to successful treatment. If the primary focus could be localized early we should be able in a large proportion of cases to extirpate it before it had infected the surrounding tissue or poured its virus

into the circulation. This has been shown to be feasible. But unless formal exploratory operations are frequently resorted to at an early stage such results will be few and far between.

Since the primary focus usually begins outside the articular surface, the author would endeavor, by limited operation, to anticipate this extension of the process, and thereby not only frequently arrest a general tuberculosis but also preserve the movements of the joint. The U-shaped incision of Moreau is recommended for exploration of the knee-joint. The diseased surfaces should be as carefully dissected out as if it were a malignant growth. If the cut surfaces are contaminated, they should be at once irrigated by a powerful germicide. After the wound is carefully irrigated and the surfaces dried by sponging, the exposed surfaces should be lightly dusted with iodoform. Deep sutures should be used. A drainage-tube is not always indispensable. A method of opening the knee-joint is to remove the tuberosity of the tibia with the ligamentum patellæ attached so that the part can be replaced. Another way is by transverse incision, sawing completely through the patella. In early cases it will be frequently found that the focus can be removed without damaging the joint surfaces. It should be remembered in operating that if it be possible to cut around the focus in healthy tissue, and to lift the diseased mass bodily out without crushing it, and with a layer of sound material around it, the chances of reinoculation of the joint is much diminished. In the cancellous tissue of the end of a bone there is often found a process of sclerosis around the tubercular focus. In such cases, in gouging out the diseased matter the surgeon should not go beyond this barrier erected by nature. Instead of using Esmarch's bandage, the author advocates elevating the leg five minutes, and then applying a broad india-rubber band near the groin.

This method is not so likely to break up the caseating foci and produce local infection. It does not cause a loss of tone and permit copious oozing. In operating, all ligaments that are sound should be carefully preserved. After using the germicide solution every part of the cut surface should be carefully dusted with finely-powdered iodoform.

The dressing should be so applied as to make even pressure. The most important part of the after-treatment is to place the limb in a vertical position for a time, so as to check oozing of blood into the wound.

Pegging or wiring of the bones is not usually necessary. No displacement will take place if the joint is firmly splinted in the fully-extended position; especially if plaster of Paris be used.

In operations upon the hip for tubercular joint-disease, bone will almost always have to be sacrificed, because the disease frequently starts in the head of the femur, and also because the anatomical arrangements of the synovial membrane are such that it can hardly be infected without the participation of the bony parts.

But by interfering at an early stage we ought to be able to effect the object we have in view by a far more limited removal of bone than was formerly considered necessary.

In operations on the hip the author advises Langenbeck's operation and the anterior incision. The latter—the most desirable—is a straight line commencing immediately below the anterior superior spinous process of the ilium, and extending downward and slightly inward for three or four inches. The capsule is divided vertically, and the neck of the femur divided without disarticulation.

The author says that the anterior incision gives sufficient drainage for the cavity left by operation, and that it has many advantages. Not a single muscular fibre need be divided. No nerves or vessels of importance are divided if the incision is not carried too low in the thigh. The patient can be placed on a splint, and there is no need to move the limb for as long a time as it is desired. The patient can be moved without danger, and so have the benefit of a change of air sooner.

The iodoform emulsion can be injected into the drainage-tube with advantage. It will sink to the deeper parts of the wound and arrest the development of any accidentally-scattered bacilli tuberculosis.

The limb should be kept abducted when healing. When the joint becomes firm in this position the pelvis tips down on the affected side; and when the patient begins to walk there is compensation for the actual shortening.

Keegan: Recent Experience in Litholapaxy in Male Children. (*N. Y. Med. Jour.*, September 22, 1888.)

The writer presents a table which embodies the principal features of interest connected with one unbroken series of one hundred and fourteen litholapaxies performed on male children and boys at the Indore Charitable Hospital, Central India, between December, 1881, when he first started this operation, and June of the present year. He thinks the table proves that the calibre of the urethra in male children is, as a rule, much larger than what surgeons in former days believed was the case.

The table also shows that Bigelow's operation is capable of dealing successfully with very large and hard stones occurring



in boys: the largest stones weighing three hundred and forty-four, three hundred and sixty, five hundred and thirty-five, six hundred and six, and seven hundred grains respectively.

He uses only fully fenestrated lithotrites in performing litholapaxy in children and boys, for he considers the use of partially fenestrated or unfenestrated lithotrites in dealing with stones in male children as absolutely dangerous.

The ages of the patients were from fifteen months to fourteen years. Time occupied in the operation from three to one hundred and eighty-two minutes. Number of lithotrite used (English scale) from 6 to 15 (No. 15 in a boy nine and one-half years old). Number of catheter used from 6 to 14. Number of times lithotrite was introduced one to twenty-six. Number of sittings in one case three. Composition of the stones, phosphatic, uric acid, urates and uric acid, uric acid and oxalate of lime, oxalate of lime, lithic acid, mulberry with slight covering of phosphates, urates and phosphates, phosphates with nucleus of oxalate of lime, uric acid with nucleus oxalate of lime and phosphatic covering, urates and uric acid. Duration of the disease was from ten days to seventy-two months. Weight of stones from one to seven hundred grains; average weight 95.05 grains. Time spent in hospital after operation from one to twenty-five days; average number of days 5.7. Results, four deaths, or 3.5 per cent. He thinks this rate of mortality should be halved, for one case was really not one of litholapaxy, but one of lithotrity at three sittings; and in another there was advanced disease of the kidneys, the operation only being undertaken at the urgent request of the parents. Dr. Keegan operated on seventy-nine of the cases; Mr. Gunputsingh and Dr. Keegan on one case; Mr. Gunputsingh on four cases; Surgeon-Major Caldecott on thirty cases. He believes litholapaxy possesses two advantages over its rivals, suprapubic and lateral lithotomy, when dealing with stones in male children,—namely, rapidity of cure and avoidance of the dangers inseparable from all cutting operations. His opinion is that it will be found that stone does not recur with greater frequency after a well-performed litholapaxy in boys than it does after suprapubic or lateral lithotomy; time and well-weighed statistics, however, can alone settle this important point. He has no doubt in his mind that, in India at any rate, where surgeons enjoy such unrivalled opportunities of becoming practically familiar with the use of the lithotrite, the future operation for the vast majority of stones occurring in male children and boys will be litholapaxy. Among this class of patients Bigelow's operation will be supplemented by lateral lithotomy for encysted stones or stones

occurring in sacculated bladders accompanied by extremely fetid urine, and where it is considered wise that the bladder should be well drained. Suprapubic cystotomy will be reserved for very large or very hard stones which may defy the powers of the lithotrite, and which may be considered too large to be extracted by forceps through the perineum. Speaking for himself, he can only say that with his present experience he should not feel justified in performing lateral or suprapubic cystotomy for the removal of any uncomplicated stone from a boy's bladder which he had good reason to think he could dispose of by litholapaxy.

Barie: Periostitis following Variola. (*Le Concours Méd.*, June 2, 1888.)

This sequela was first observed by J. L. Petit. The author has seen four cases in which it occurred. It is of frequent occurrence after typhoid fever, measles, scarlatina, and other infectious diseases, and should also be regarded as one of the numerous complications of variola. In the latter disease it is usually seen from the fourth to the sixth week, and especially among youths or young adults who have not yet finished the period of growth. It may be limited to a single bone or include several in different portions of the body. It generally involves the long bones, at the end of the diaphysis or at the junction of the diaphysis with the epiphysis. There is a decided predilection for the lower extremity, and especially for the tibia. The complication is characterized by a spontaneous pain, more or less severe, which increases with pressure and motion, and by marked swelling in the region of the diseased bone, though the skin presents a normal appearance. There is no fever, and the condition terminates by resolution in two to six weeks, though recurrences are not infrequent. The treatment consists of rest, enveloping the limb in soothing poultices, and occasionally in the use of vesicants or other resolvents.

Variolous periostitis is directly due to the infectious agent which occurs in all the clinical phenomena of variola. The fatigue which sometimes accompanies walking or standing during convalescence from the disease may be a forerunner of this complication. Usually the course of this condition is benign and ends in complete recovery, but in some cases it is like other infectious diseases which have this complication, and results in suppuration, with osteitis, necrosis, and possibly osteomyelitis.

A. F. C.

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THERAPEUTICS OF INFANCY AND CHILD-  
HOOD.

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eases of Children in the College of Physicians and Surgeons, New York, etc.

(Continued from November Number.)

V.—INFECTIOUS DISEASES.

1. *Intermittent Fever.*

In older children it has the same type as in adults. We have acute and chronic forms, the quotidian, tertian, and quartan types. There are the same results and anatomical lesions. There is the general anæmia, the splenic tumor, the hemorrhages, the amyloid degeneration.

It is only in infants and very young children that the diagnosis becomes difficult. In them the type is mostly quotidian. Besides, the attack may come at irregular times. Not infrequently is it seen in connection with catarrhal diseases, which appear to create a susceptibility to the poison. The chills are not easily diagnosticated. The sweating is very frequently not profuse. The tumor of the spleen can be recognized only at a late period, but the fever is apt to be very high. Sometimes the attack is not recognized because of the first symptom being



a convulsion. For all these reasons the diagnosis is very often not made.

Quinine ought to be given, if the attacks come at regular intervals, in a single dose, two or three hours before the attack. If they occur at irregular periods, it is better to divide up the total amount of quinine in three or four doses, to be given through the day. In the first case a dose of five grains will suffice for a child of three years; in the second case eight or ten grains will be required.

It is not always easy to give quinine because of the taste. A solution ought not to be tried for the same reason. One part of the sulphate of quinine may be given with forty parts of elixir simplex, but in every case the dose must be mixed just before given. The neutral tannate of quinine is tasteless, and may be given in powder, but for one part of the sulphate two and a half of the neutral tannate must be administered. The sulphate may be given mixed in chocolate—older children will greedily take it—or in coffee or syrup of coffee. When it cannot be given internally, rectal injections may take the place of the internal administration. No acid must be added to the solution; therefore very soluble preparations only must be used, for instance, the bromide, the muriate, the bisulphate, the carbamide; or suppositories can be given, but with less positive effect than that of other modes of administration. Inunction of quinine has been recommended a great many times. The ointments made as usual with animal fats have but very little effect. Where it would be impossible to use any other method, quinine might be dissolved and mixed with fat and a larger quantity of lanolin; but even in this case the dose which really penetrates the skin and enters the circulation cannot be determined. A subcutaneous administration of quinine becomes necessary when no other can be resorted to, or when an immediate effect is required. The best preparation for the purpose is the carbamide, which will dissolve in five or six parts of water, and give rise to less induration than we are liable to meet with when using the other salts.

In the chronic form arsenic is the principal remedy, as in the cases of adults. A child of three years may commence

with one drop of liquor potassii arsenitis (Fowler) three times a day, to be administered as detailed in a former essay. The liquor sodii arseniatis of the Pharmacopœia may take its place in those cases in which the stomach is very irritable; also the preparation of the same name as introduced by Pearson, which is ten times milder than the officinal preparation, and must be given in proportionate doses. In a number of cases the solutions of arsenic are not well tolerated, and the arsenious acid may be given instead. It may be given in pills to older children in doses of a one-hundred-and-fiftieth to one-hundredth of a grain, three times a day, or more, to children of three years, or it may be administered as a powder in combination with other medicines. It may be safely mixed with bismuth, for the disagreeable odor emanating from persons taking bismuth, which has been attributed to arsenic contained in the bismuth, really belongs to a minute dose of tellurium inseparable from some specimens of bismuth in the market. All these preparations of arsenic may and must be given for many weeks or months. Constitutional symptoms belonging to an overdose I have seen more frequently when using Fowler's solution than any of the other preparations.

Tincture of eucalyptus has been given in acute, and particularly in chronic, cases. It renders good service now and then in doses of from ten to twenty-five drops, three or more times a day.

As there are very obstinate cases in the adult, so there are in children. In them, too, the spleen may remain large and the attacks return indefinitely. These are the cases which try the endurance of the patient and the patience of the physician. In them I have seen excellent results from the use of ergot these thirty years. Ergot may be given as fluid extract, and then a child of three years may take from a scruple to a drachm every day for weeks in succession, or a corresponding quantity of the extract of ergot,—that is, from three to ten grains every day, either in mixtures or, for older children, in pills. I have noticed in a good many cases, in which the fluid extract was not tolerated at all, that the extract of ergot, when given in the latter shape, was easily tolerated.

2. *Typhoid Fever.*

Its danger may come from a great many sources.

*First.* From the feeble original condition of the patient. Diabetes and alcoholism are rare in infants and children, hereditary syphilis not to the same extent. But general anæmia, either congenital or the result of previous diseases, such as intestinal disorders or chronic respiratory ailments, is frequent. Chronic bronchitis, emphysema, and previously contracted diseases of the heart impair the prognosis considerably.

*Second.* The amount and intensity of the poison floating in the circulation and introduced into the tissues.

*Third.* Abnormally high temperature.

*Fourth.* Insufficient power or actual failure of the heart.

*Fifth.* Consecutive conditions, such as diarrhœa, intestinal hemorrhages, local or general peritonitis, perforations, or ulcerative endocarditis.

*Sixth.* Complications which, however, sometimes are to be counted among the consecutive conditions, such as meningitis and nephritis.

*Preventive treatment* has led to very good results. Many houses and towns which were the seats of endemic typhoid fever have been rendered immune by improving the sewerage and the condition of the neighborhood. For typhoid fever and dysentery can be traced positively to exhalations of privies, while with regard to other diseases we can only say that animal exhalations of the same character may create a predisposition by impairing the general health, but are not able to produce specific diseases independently of other influences. Where the drinking-water is suspected, it ought to be boiled. No raw milk should be given. The fæces of the patient must be disinfected, though there be no diarrhœa, by crude muriatic acid, carbolic acid, copperas, or corrosive sublimate. The sick must be isolated, and the practice still prevalent in many hospitals to locate typhoid patients in general wards must be abolished.

Can typhoid fever be *aborted*? or, in other words, can incubation be interrupted? An affirmative answer to this question has often been given, but it is difficult to prove the correctness of the diagnosis in an alleged case of typhoid fever lasting a few



days only. Still, there can be no objection to believing that the proliferation of the poison floating in the blood may be interrupted by antifermentative treatment, and it is certainly either justifiable or advisable to try the effect of otherwise not injurious antifermentatives, such, perhaps, as creolin or bichloride of mercury. As regards the early administration of a large dose of calomel, its effect is notoriously good, no matter whether it acts as a disinfectant directly on the poison, or whether it simply relieves the intestinal tract of the poison introduced and in progress of proliferation. A child of three years may take a dose of three or four grains; a child of eight years one of seven or eight grains. While the purgative effect of the calomel can be obtained by simply introducing the powder into the mouth, there to be absorbed, it is better in this case to let it be swallowed. It can be safely given during all of the first week of the disease. When, as frequently, there is constipation during the course of the disease, calomel is no less beneficial, but then it must be given in smaller doses, which may be repeated. Small doses of a quarter of a grain to a half-grain, repeated several times a day, will even have a good effect after diarrhœa has been present and been relieved.

With regard to the *general treatment* of the typhoid fever of children, we are equally liable to injure either by overactivity or by neglect. The so-called *expectant* treatment has its great dangers in the hands of those who make it their invariable rule; it is safe in the hands of those only who have learned to treat the sick rather than the sickness. The air in the sick-room must be cool, the windows open. Drafts, it is true, must be avoided, but screens around the bed will permit the opening of both windows and doors. The bed-sheets must be smooth; four or eight safety-pins will fasten them to the corners and sides of the mattress. At an early period the whole surface ought to be washed with either water alone or with alcohol and water. The hair, when long, ought to be cut. The children must be allowed plenty of water. Those who are liable to have dry lips and tongue must be made to drink a small quantity of either water or dilute muriatic acid in water, ten minims to the tumblerful, in small quantities every ten or twenty minutes. Fissures around the lips or in the

tongue ought to be washed with a saturated solution of boracic acid, or, when bleeding, should be painted once a day with a mild solution of nitrate of silver (not more than one per cent.) and afterwards painted with an ointment consisting of boracic acid and lanolin.

Very much depends on the mode of *feeding*. No solid food must be given. Boiled milk, broths, farinaceous decoctions, strained. For older children, one or two soft-boiled eggs, either the whole of them or the white only; meat-juice. As a general thing, more albuminoids than carbohydrates ought to be given. The food must be so arranged as to be digested in the stomach, and not encumber the intestines. If necessary, a small quantity of pepsin and muriatic acid may be given with it. Peptones may be given, but they must not form anything like the exclusive diet. At a later period very small quantities of toasted bread may be added to the milk.

The tendency to complications with *bronchitis* requires frequent changes in the position of the patients. They ought to be turned from their backs to their sides every few hours, and back after a while; otherwise they ought not to be moved too much. Particular care ought to be taken not to raise them too often. Physical and mental rest is an absolute necessity. Defecation must take place in the recumbent posture. They must not be permitted to strain.

The danger arising from *high temperatures* varies in different patients. Their injurious influences depend, from a clinical point of view, on many causes, foremost among which are both individual susceptibility and the length of time during which the child is exposed to its internal heat. A high temperature lasting but a certain time, and alternating with either an intermission or a remission (as, for instance, in intermittent or relapsing fevers), may not prove dangerous at all, and not require any treatment. But the frequent repetition of elevated temperatures, or their long duration, demand interference. Therefore they ought to be taken at least four times a day, particularly as typhoid fever is apt to yield two daily exacerbations and remissions.

Continued high temperatures in the course of typhoid fever,

or intense fever at the very beginning of the disease, require treatment. In them the frequency and quality of the pulse, and the functions of the nervous system, are seriously disturbed at an early time. Under the influence of a cold bath both temperature and heart-beats diminish, arterial pressure increases, and the intellect becomes clear. But it has a peculiarly great influence on the infant and child. In them the surface is relatively larger than in adults, and the cooling more rapid and intense. The circulation is easily disturbed, the surface temperature not readily restored afterwards. It may happen that the internal temperature rises while the external blood-vessels are contracted by cold, and the internal organs become engorged. In those cases a hot bath is more liable to restore radiation from the skin and reduce internal heat. In every case, where no immediate reaction takes place,—mainly about the extremities,—after the child has been taken from the bath, this must not be repeated, and the feet kept thoroughly warm. In such cases a warm bath is infinitely milder and more useful; or where the temperature is high and threatening, a cold pack—as detailed in a former essay—around the trunk is preferable. At the same time the feet must be kept warm and a stimulant given. Cold applications to the heart are frequently sufficient to reduce temperature. In such cases as develop sopor at an early period, together with high temperatures, the pouring of tepid or cool water over the head, or head and shoulders, is very beneficial. The contraindications to the use of the bath are general debility, weakness of the heart, cold extremities, a cold surface, complicated with high internal temperature, and intestinal hemorrhage.

The medicinal agents used to reduce temperatures in typhoid fever are salicylate of sodium, antipyrin, antifebrin, phenacetin, and quinia. Kairin and thallin deserve no recommendation, for the reason that, while their effect is no better, their efficacy is soon exhausted, and the drug has to be repeated after very short intervals. All of the medicines mentioned above must be given carefully. To avoid a possible debilitating effect on the heart, a general or cardiac stimulant must be given at the same time. All of them may be given in small doses, frequently repeated, when the remission is not



marked ; but as a rule an occasional larger dose is preferable. Antipyrin can be administered internally, through the rectum or subcutaneously. A child of three years may take from ten to twenty-five grains a day, in from two to four doses, two of which have often to be given in close proximity (the second after an hour or two hours). The dose of antifebrin is but one-third or one-quarter of that of the former. It is, because of its more difficult solubility, not available subcutaneously, and less so than antipyrin, in the rectum. Phenacetin may be given in doses of from two to five grains, twice or three times a day, to a child of the same age. The administration of quinia follows, as a rule, the method detailed above, but in typhoid fever it is liable to disorder the stomach and intestine and produce diarrhœa or tenesmus. Its time is the remission, its single dose from five to seven grains, once a day or every other day, and its best indication the persistence of the splenic enlargement in the course of the third week of the disease. The combination of quinia with one of the other antifebriles yields good results quite often when one of them does not appear to be sufficient, in the same way that the effect of a tepid bath combined with an antifebrile is, now and then, quite astonishing.

The intestinal tract is the seat of many dangers. *Tympanites* and *meteorismus* depend on the paralytic condition resulting from enteritis only, or enteritis and peritonitis. The latter is either local, and corresponds with the local ulcerations, or general. Cold applications are serviceable. Enemata of ice-water will sometimes do good ; or of an aromatic infusion (chamomile, anise, fennel, catnip) ; sometimes of turpentine half a tablespoonful or a tablespoonful mixed with the fluid (water, or soap and water). The introduction of a large catheter, with one or more additional eyes, may relieve the lowest part of the intestine. Puncture of the inflated intestine by means of a small syringe ("hypodermic") is not dangerous in such cases where it is not required. Where it would be of service, however,—that is, in the very worst forms of intestinal paralysis, with intense and dangerous inflation,—it is injurious. For in these cases the elasticity of the intestinal wall is gone, and the small punctures in the intestinal wall re-

main open. I have seen fæces entering the abdominal cavity through them, and fatal peritonitis, of my own making.

*Diarrhœa*, when moderate, need not be interfered with in any period of the disease. It is probable that the initial dose of calomel prevents it in a great many cases. When it is copious, such remedies as pass through the whole length of the intestine will render good service either by their soothing or disinfectant effect. Subnitrate or subcarbonate of bismuth, from a scruple to a drachm daily, are valuable. Salicylate of bismuth does not always act kindly on the stomach. Naphthalin, half a grain to a grain every two hours, when tolerated by the stomach,—in most cases it is,—improves the odor of the evacuations and diminishes their number. In many cases I have given it, for its disinfectant action, from the very beginning of the fever. Salol, in doses of from one to three grains every two hours, has a similar effect. Mild doses of opium may be added, from half a minim to a minim of the tincture, every two or four hours. Resorcin is better tolerated than either, but it does not pass the whole tract. Cold applications, covered with rubber cloth and (or) flannel; they must be changed every twenty or thirty minutes. Or warm applications may take their places when the little patients are quite feeble and anæmic. Among the astringents, when required, I prefer acetate of lead. Both tannin (gallic acid is milder) and alum are liable to annoy the stomach.

*Constipation* is much more frequent in our cases of typhoid fever in both the young and old than in the descriptions of the books, both European and copied. When not too persistent it is not objectionable; for most children have not suffered from constipation before the disease began, and accumulation of fæces is not a very prominent feature in them. When there is peritonitis it must not be disturbed, at any rate. In no case must strong purgatives be given. Castor oil in small doses may become necessary; half a teaspoonful or a teaspoonful, every few hours, may then be given, or small and repeated doses of calomel, from a quarter to one-half of a grain. Rectal injections, tepid, of water with, or mostly without, turpentine, will be all that is required in most cases.

*Perforations* require the treatment best adapted to euthanasia,

opium and stimulants; (mostly) cool applications to the abdomen, and hot ones to the feet.

*Hemorrhages* are not so frequent, as in the typhoid fevers of adults, in those of the very young, because of the superficial character of the ulcerations. But in older children the intestinal lesions are apt to be as grave as in more advanced periods of life. No food must be given for some time, drink in small quantities only, but repeatedly. Applications of iced cloths, ice-bladder, or a lump of ice—to lose no time—to the right hypochondrium. They may be moderately heavy, for some pressure may have a local influence. Hot injections into the rectum have no styptic effect, iced ones may act through reflex. Internally, alum or lead, one-quarter or one-half grain or more, every hour or two hours, with opium and digitalis. Ergotin, or fluid extract of ergot, and other preparations of the drug which were claimed to be innocuous, I have seen to give rise, frequently, to indurations or abscesses after their subcutaneous administration. Their effect is mostly questionable, for typhoid hemorrhages are liable to cease soon, after a single attack. I have seen gangrene over a large surface after their use, and pyæmia several times. In the case of a little girl, I had to incise about sixty metastases in the course of two months before she was saved from a pyæmia which resulted from a single hypodermic injection. The internal administration of ergot may be tried when the condition of the stomach permits it. Subcutaneous injections of sclerotinic acid (one to five) have been recommended. To counteract the imminent fatal termination I have been compelled to perform transfusion of blood in the case of an adult; she recovered, but died on the fiftieth day of a relapse. Injections into the subcutaneous tissue, of blood or salt water, have been advised. They prove what a sick human being may, or has to, submit to and perhaps overcome. *Quidquid delirant medici plectuntur ægroti.*

The condition of the *heart* cannot but influence the course of the disease, its complications and consecutive disorders. It cannot but be enfeebled by a serious and protracted disease such as typhoid fever; still, to what extent this feebleness will be exhibited cannot be predicted. Besides, it depends to a



great extent on causes not exactly connected with the infection itself. Among these accessory causes are original—congenital—debility and chronic heart-diseases previously contracted. Besides, the infection itself with its accompanying fever is apt to give rise to an acute myocarditis, or to granular degeneration of the heart-muscle. Among the symptoms of debility of the heart, which may easily lead to complete *heart-failure*, are pallor of the skin and mucous membranes, purplish and cyanotic hue, particularly of the lips, ears, and finger-ends, mottled appearance of the surface depending on venous stagnation in the small blood-vessels, cold extremities and nose, slow or, more commonly, frequent pulse, which, moreover, is arrhythmic, and a heart-beat the sounds of which are either split or embryocardiac,—that is, exhibiting equal intervals between the first and second sounds.

The *brain symptoms* belonging to heart-failure are those of anæmia. When beginning to treat them, we must not forget the possibility of an error in the diagnosis of the condition, which may be quite serious, because the signs of anæmia and hyperæmia are the same in many respects. However, the general indications for the treatment of heart-failure may be laid down in a few rules, the first of which refers to prevention. As heart feebleness must be expected in every protracted disease, and failure feared in many, we ought to act, as a matter of prevention, exactly as the surgeon does in his operations. Before the times of antisepsis there were a great many operations which would not lead to sepsis or erysipelas. Indeed, these cases were the minority, perhaps a small one at that. But no surgeon would at present perform any operation, either serious or trifling, without antiseptic measures. If he neglected them, he would justly be held responsible for any mishap in the shape of erysipelas or pyæmia. Now, the certainty of cardiac debility and the danger of heart-failure are much more threatening in an infectious fever than those complications of convalescence after an operation. Therefore in no case of typhoid fever ought the heart to be left alone to fight its own battle unaided, with the chances of being overexerted (with possible hypertrophy from that cause), fatigued, or exhausted. The doses of the cardiac stimulants cannot be stated categoric-

ally, but the principle must be established that it is a good rule to give moderate amounts of digitalis, strophanthus, convallaria, sparteine, caffeine, etc. The particulars have either been stated in former essays or must be left to the judgment of the practitioner. Digitalis and strophanthus may derange the stomach after a while; digitalis may not act quickly enough under certain circumstances; in such a case sulphate of sparteine, which is readily dissolved, absorbed, and eliminated, in doses of one-tenth to one-quarter of a grain every two or four hours will render good services. Caffeine must not be given when there is hyperæmia of the brain. The sodio-benzoate and sodio-salicylate of caffeine dissolve readily in two parts of water, and are reliable aids in sudden attacks of heart-failure, in hypodermic administration. Camphor internally, in doses and according to methods described before, will answer well in either the presence or absence of pulmonary complications. In cases of emergency its subcutaneous administration works admirably in either ether or almond oil, the former in ten- the latter in twenty-per-cent. solutions. The latter is less painful, and obstructs the instrument less readily.

Carbonate of ammonium disorders the stomach more frequently than camphor is apt to do. Muriate of ammonium has no stimulant effect at all. Brandy and whiskey, when of good quality and well diluted (at least one in four or five parts of water or milk), hold the first rank. That they should, while sufficient doses must be insisted upon, not be given at all unless indicated, and omitted as soon as no longer wanted, is self-understood. Still, I know that they are often continued too long, and the occurrence of cirrhosis of the liver in children who exhibited no other cause of the disease except the protracted use of alcohol for alleged medical reasons, are by no means unheard of. Champagne will often take the place of brandy and whiskey when speedy stimulation is required, or Tokay, Madeira, Sherry, or a California wine, when the former are objected to because of their taste. When there is diarrhœa, opium given in small doses, perhaps half a minim of the tincture every hour or every two hours, to a child of three years, will act both as a cardiac stimulant and astringent. Of Siberian musk as a powerful stimulant I have spoken in a previous

chapter. Nitro-glycerin in doses of a two-hundredth or one-hundredth of a grain, repeated frequently until four or six doses have been taken, will be found a vigorous remedy when, while the heart is still found acting, the arterial pulse is flagging.

Whatever medicines may be found desirable, the child must be kept absolutely quiet. In a recumbent posture it has to remain, as a rule; thus the food has to be given, thus it has to be carried to the window, or into the open air, if circumstances permit. Many a case will exhibit a wonderful improvement on the lawn, or under shade-trees, that looked like being near extinction within the four walls.

Besides, the surface has to be kept warm. It is principally the extremities which require external heat. A hot bath, without or with an aromatic addition, and hot injections into the bowels will do a world of good in many a desperate case, always provided that the manipulations required are absolutely gentle and not exhausting.

To relieve complications of the *brain* in typhoid fever the hair ought to be cut very short, the head kept cool, feather pillows not tolerated; the head of small children may be washed frequently, or water poured over it while the body and throat are protected by an india-rubber cloth. The application of ice-water directly to the head in small children is not tolerated for a long time. It may give rise to collapse, and must be carefully watched. While the head is to be kept cool, the feet must be kept warm. Mustard foot-baths and hot applications to the feet, cold water or an ice-bladder to the heart, an ice-bladder around the neck, will be found very comfortable. When there is the slightest brain complication not depending on the infection itself or anæmia, no alcohol must be given, no opium, and no caffeine, though it may appear indicated by the condition of the heart. The head ought to be kept high, and it is sometimes necessary where the meningitic symptoms are quite clear to resort to local depletion. In these cases the leeches may be applied to the mastoid process or, better still, to the septum narium. Where the brain symptoms belong to the infection alone, or to anæmia, opium is well tolerated, and relieves sleeplessness and the general irritability. Now and then codeine may take its place, or the hydrate



of amylen or chloral hydrate. Sometimes the subcutaneous injection of morphine, one or two minims of Magendie's solution, will give instantaneous relief. Warm bathing will prove beneficial in such conditions of general excitability. In these cases the use of cold must be carefully avoided.

During *convalescence* sudden changes in feeding must be avoided. It is dangerous to give other than fluid diet before the tenth day after the fever has disappeared. After that time white meats, plain puddings, and jellies may be added. Raw fruit must not be given under any circumstances. Patients must not be taken out of bed sooner than a fortnight after their fever has disappeared. Older children must not be allowed to read. No visitors ought to be admitted during that time any more than during the duration of the disease, for during that very time weakness of the cerebral functions makes its appearance or, when met with afterwards, is traceable to it. During that time the temperature and the movements must still be watched very carefully, for relapses may set in at any time. Such relapses are very frequently the result of improper food, which will irritate the intestinal ulcerations, the process of whose healing is thereby interrupted. The greatest care must be taken in those cases in which the spleen, when tumefied during the progress of the disease, will not nearly assume its normal size about the end of the third week. When it remains large, a relapse may be looked for.

The large number of *consecutive diseases* which may result from typhoid fever are ample proofs that all such measures are by no means superfluous; multiple abscesses of the muscles, ostitis, epiphysitis, and arthritis are not very uncommon after typhoid fever. Noma is now and then seen, but it is only just to state that epiphysitis and arthritis are not so frequent after typhoid fever as, for instance, after scarlet fever, and noma not so frequent as after measles. But purpura may remain behind. Parotitis is not very uncommon. Thrombi in the extremities are sometimes met with. Erysipelas, laryngeal perichondritis, and cutaneous gangrene are by no means rare. But it is certain that many of these occurrences can be avoided if greater care be taken during the progress of the disease.

(To be continued.)

## DISEASES OF THE MOUTH (NON-SURGICAL).

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(Continued from November Number.)

### II.—STOMATITIS APHTHOSA.

*Etiology.*—Concerning the etiology of this affection we are completely in the dark, as far as positive knowledge is concerned. A great many views have been expressed and a great many things have been brought into causal connection with stomatitis aphthosa, but as yet no lesion has been discovered beyond those which will be described and which are absolutely inconclusive. The cause must be sought for either in the mucous membrane itself or in structures remote from it. As to the mucous membrane, there are many causes which might produce an eruption upon it of the nature described before. By means of applying caustics it is possible to imitate the appearance and course of aphthæ in the mouth (Gerhardt, Bohn). I have seen burns in the mouth, produced in one instance by the head of a burning match, which it would have been impossible to differentiate from aphthæ. But such external causes can be disregarded, as the eruption appears without any apparent external cause. It is natural that lower forms of life should have been accused of causing this trouble; but I have had eight cases of stomatitis aphthosa examined into by two most competent observers, Drs. Cameron and Freeman, demonstrators of bacteriology in the Medical College of Ohio, Cincinnati, with an absolutely negative result, as, after the most careful search, including plate- and tube-culture, only pus-formers were found. These were found in two out of the eight cases, and must, therefore, be looked upon as accidental. It can therefore be conclusively accepted that there exists no localized cause in the mucous membrane. But one structure or structures remote from the mucous membrane could be accused of producing aphthæ,—the nervous system. Bohn

shows that the greatest number of cases occurs between the tenth and thirtieth month after birth. Because the teeth come through about this time, and because prurition of a tooth is frequently accompanied or followed by aphthæ, he comes to the conclusion, which is not unwarranted, that the process of teething has something to do with stomatitis aphthosa. We find aphthæ associated with any number of diseases,—pneumonia, ague, gastro-intestinal catarrhs, the acute exanthemata, etc. If there exists any connection between teething, pneumonia, ague, etc., and stomatitis aphthosa, bacillary origin being positively excluded, it must be through the nervous system. This view has been expressed by Bärensprung, who thinks that some forms of herpes facialis may be due to lesions in smaller ganglia, just as herpes zoster is due to lesions in the spinal ganglia. There are objections to the acceptance of this view, however, as the eruption is not localized anatomically, as in herpes zoster, and frequently it is too general to be explained by the affection of one or two nerves. That an eruption can be produced by affection of nerves or nerve-centres is a fact accepted by dermatologists (Kaposi, Sattler, etc.). The eruption thus caused is herpes, and when herpes appears in the mouth it is “stomatitis aphthosa.” Bohn, who in the beginning of his excellent article insists on the non-existence of vesicles, at the end of his chapter compares aphthæ with eczema or impetigo. Anatomically speaking, eczema is a process characterized by serous exudation and impetigo by purulent exudation. No one could claim that aphthæ are characterized by either of these two products, and when eczema does appear upon a mucous membrane (of the nose) there is no difficulty in recognizing it as such and no hesitation in separating it from an aphthous eruption. The fact that aphthæ may be found in children with impetigo is of no possible value as establishing any connection between them. If we grant that aphthæ come out in groups (which will be shown to be the case), and if we admit that a vesicle in the mouth would present all the characteristics of an aphthæ, we are forced to the following conclusion: aphthæ are eruptions characterized by vesicles which appear in groups. This, it will be seen, is an exact definition of herpes.

Occasionally cases are reported in which the evidence seems



to point to the contagiousness of this form of affection. There is no doubt that two or more cases will sometimes happen in the same family. Careful inquiry will almost always result in establishing the fact that the aphthous process is produced in these cases by the same cause; that the aphthæ are due to a disease, endemic or epidemic, which has attacked the various members of a family. In some instances we may be left entirely in the dark concerning the nature of an apparent epidemic; but the fact must not be lost sight of, that stomatitis aphthosa is a conglomeration of symptoms the exact nature of which eludes discovery.

The attempt has been made to bring this disease into relation with the hóof and mouth disease of cattle. If this should be proved in every instance, hoof and mouth disease must be very much more common in cattle than we have any reason to suppose. The possibility of a connection cannot be denied, and, if proved, would place aphthæ among the infectious diseases. Certain it is, however, that the cases which have come under my observation and the eight cases examined, mentioned above, were not of this nature. Cnyrim (*Jahrbch. f. Kinderheilkunde*, N. F., xxiii.) reports an outbreak of hoof and mouth disease among the cows of Model Dairy at Frankfurt-am-Main. The attempt was made to determine whether drinking the milk from the diseased cows had the effect of producing aphthæ, but the results were unsatisfactory. Fifty-three physicians answered questions relative to their patients who took milk from the dairy; out of this number twelve noticed eruptive diseases in the patients. In eight of these no connection existed between the milk of the dairy and the eruption, as the patients took milk from other cows. In the remaining four one physician reports herpes of the upper lip and throat, another reports two cases of skin affection, another vesicles upon the mouth and lips, and a fourth two cases of stomatitis aphthosa. So that, after all, there are but two cases left, and the final conclusion of the author seems justified, "that those consumers who remained true to the dairy did not suffer," which is the same result arrived at in the epidemic of 1877.

*Symptomatology*.—Setting aside whatever general disturb-

ances may be concomitant with the disease upon which aphthæ are engrafted, the symptoms are principally confined to local manifestations. Preceding the eruption of aphthæ there is usually present more or less stomatitis catarrhalis. This may be due to the disease producing the stomatitis aphthosa (malaria, pneumonia, etc.), or may be produced by the aphthous process itself. We find an analogue in herpes zoster facialis when the gums or cheeks become affected, and redness is always present even if no distinct eruption appears.

The aphthæ appear with lightning rapidity. A mouth which has been examined and found slightly reddened will, the next day, have an extensive eruption of characteristic lesions. These consist of small subepithelial whitish or yellowish-white spots, appearing singly or in groups, which may develop in any part of the mouth. They are not unilateral and, probably, are not confined to the cavity of the mouth (they not infrequently extend into the pharynx). The eruption as such is very short-lived,—after from twelve to thirty-six hours the epithelial covering is soaked off, and there is left the so-called aphthous ulcer. This is characterized by its outline, formed by a slight depression surrounded by a red margin (the latter also present in the former state), and its floor being lined by the original contents of the vesicle. Where two or more aphthæ have developed close enough to each other, we find the ulcer becoming serpiginous, in that two or more have run into each other. After a few days more the epithelial layer begins to be regenerated, the small mass at the bottom of the ulcer is enclosed by this layer encroaching upon it from all sides, it is lifted up and projects beyond the level of the mucous membrane, and finally disappears. Or the floor of the ulcer is cleared, the exudation being washed away, and there is left a surface denuded of epithelial cells, which will bleed only when rudely touched. Again, some aphthæ will be absorbed without the outer epithelial layer breaking. When there are complications (stomatitis ulcerosa) the aphthæ sometimes become infected, and then we have a true suppurative process going on. As a rule, the aphthæ appear in crops,—the one succeeding the other,—so that the course of the disease may become somewhat protracted,—ten to fourteen days. Cases

lasting beyond this time are much rarer in children than in adults.

The exudation as it is found in the ulcer will be found to be made up of small, indifferent cells, some fibres, and several varieties of lower forms of life usually found in the mouth, but not pathogenic. All the cases examined into were free from pathogenic forms which could explain the occurrence of the eruption.

The denudation of the epithelial layer is covered up with new cells and no cicatrix is left, because the connective tissue is not affected. The young epithelial cells are at first opaque, so that a white spot is left where the aphtha was; in a short time, however, this disappears unless the process was complicated by some other form, when a slight scar remains.

While this whole process is going on the subjective symptoms vary enormously. Some children are affected very little by stomatitis aphthosa; indeed, as a rule it is only the denudation and its contemporary irritation and reaction which produces symptoms. These are the same as described under stomatitis catarrhalis,—salivation, pain, restlessness, loss of appetite, etc. Bohn lays especial stress upon the fact that the saliva in stomatitis aphthosa is not fetid. This can be verified in every instance, unless a complication exists with stomatitis ulcerosa, which is not very rare. In some instances the eruption is so extensive that the whole mouth is covered with it and produces the picture of a diphtheritic inflammation. If differential diagnosis is not possible in the first instance, a day of waiting will clear up the whole picture, as by that time some of the spots will become denuded and symptoms of general infection will have appeared.

*Prognosis.*—This is absolutely good. The same that holds good for stomatitis catarrhalis is also true here. We are dealing with a self-limited disease, which does no harm except in that it may affect the general health of the patient. As far as the local trouble is concerned, in an otherwise healthy child, stomatitis aphthosa is to be looked upon as a painful but harmless affection. It is barely possible for the ulcers produced by this disease to become infected with other poisons (some cases reported by Schrakamp are possibly of this nature),



but this is, fortunately, of rare occurrence. Good or bad general conditions of health seem to have very little to do with the frequency of the eruption,—it is very easy to say that rachitic, syphilitic, badly-nourished, etc., children are more liable to aphthæ than healthy ones. Beyond the fact that this form of trouble is concomitant with a great many acute diseases these statements are perfectly gratuitous and require to be proven. A form of chronic ulcers seen in adults is very rare in children. These are catarrhal in nature, come and go, last for a long time, and are usually accompanied by general disturbances. It is a mistake, however, to call these ulcers aphthous, as they do not possess any of the characteristics of aphthæ, not the least important, for the latter, being their tendency to spontaneous healing. These chronic catarrhal ulcers have been confounded with aphthæ, and what is true for them has been ascribed to the aphthous process. For the explanation of their general constitutional effects we refer to the previous chapters. Relapses are not common in children after the affection is once healed, another evidence that the general condition has little to do with the appearance of this eruption. It will occur that in a reduced child the process does not have a tendency to get well,—just as an ulcer upon the skin under the same conditions would not heal. In such cases these ulcers, as has been indicated before, may give rise to a great deal of trouble.

*Treatment.*—The object of treatment is to give relief from pain and prevent infection. The former, and possibly the latter, is accomplished by touching each ulcer with nitrate of silver. The treatment is identical with that recommended for catarrhal ulcers and gives just as much relief. I have never had good results from cocaine, recommended by some authors in troubles of the mouth (Bockhardt, *Monatshefte f. Dermatol.*, v. ii., 1886), and would hesitate to employ the very strong solutions (ten to twenty per cent.) recommended. Baginsky speaks very highly of permanganate of potassium (0.10 to 15.00) and considers it almost a specific, curing the affection in a short time (*wenigen Tagen*). Chlorate of potassium is unnecessary, as much so as the great number of external remedies that have been vaunted and applied. The same rules for diet put down

in the previous chapter also apply here. The fact must never be lost sight of that a pure, uncomplicated case of stomatitis gets well of its own accord, and all the physician need do is to watch, give relief, and prevent any complications by hygienic measures.

#### BEDNAR'S APHTHÆ.

In 1850, Bednar's small but, clinically, very valuable book appeared, in which was described a peculiar form of lesion of the mouth, which has since been accepted as Bednar's aphthæ ("Die Krankheiten d. Neugeborenen u. Säuglinge," etc. Vienna, 1850). He states that this form is only found in infants from the second day after birth to the age of six weeks. There are five different forms, characterized by the locality and nature of the eruption,—the first three are found upon the hard palate, the fourth upon the soft palate as well, and the fifth is hemorrhagic. They are preceded by an injection of the mucous membrane, and then follows an exudation, gray or yellowish-white, subepithelial. This breaks down and leaves an ulcer. They are found in the posterior portion of the hard palate either on one side (first form), symmetrical (second form) or combined with one upon the palatine suture, but always near the velum palati. Such, in brief, is Bednar's description. It is not difficult to see that a great many processes may run their course and give rise to symptoms akin to those described. Such is the case, and we find at least three different conditions, perhaps more, which it is impossible to distinguish the one from the other. There is that process which is found in the mouths of newly-born infants as well as upon their skins, the development of milia; when these ulcerate from one cause or another, they give rise to appearances similar to the aphthæ of Bednar. There are retention cysts, very small, like acne, which may also be followed by ulcerations (Bohn). Epstein claims that small defects, congenital, exist in the mucous membrane filled with epithelial detritus which simulate Bednar's aphthæ. The same author states that true ulcers, produced by decubitus, may occur upon a mucous membrane affected by catarrhal stomatitis caused by nursing. For this he gives an anatomical explanation in that the part of the mucous membrane affected becomes most tense and anæmic during the act of nursing, and therefore

more liable to be affected by pressure than any other part. Comparatively recently Fischl (*Prag. Med. Wochenschrift*, xi. 41, 1886) has made observations which throw some light upon the etiology of Bednar's aphthæ. He took a large number of children in the Foundling Asylum at Prague and divided them into three groups. In the first group the mouth was left alone, not washed nor cleansed in any way; in the second group the mouth was washed and cleansed regularly; and in the third no especial attention was paid to the matter, so that some were and some were not washed out. The result was that in the first group five per cent. were affected, in the second fifty-four per cent., and in the third fifteen per cent. The ulcerations of the soft palate were also noticed most frequently in the second group. It seems, then, that the most common cause for these aphthæ is violence; and the statement will certainly be borne out by the experience that, when this form of trouble is noticed at all, it is much more common in hospital than in private practice. In private practice the nurse is under the observation of the mother, in hospital practice she is apt to be too zealous in the performance of her duty; when she is ordered to keep the mouth of a patient clean, it is done hurriedly and, perhaps, not too gently. The ulcerations upon the velum are just in the locality where the end of the finger would touch when introduced into the mouth, and those upon the hard palate can be explained just as readily by the sweeping motion of the back of the finger. While it cannot be denied that these aphthæ may arise spontaneously in any of the ways indicated before, it must be confessed that the origin by violence must be looked upon as the most common.

Again, these ulcers are self-limited, their tendency is to get well. The symptoms produced are those of pain in nursing only, and the consequences of not taking food. They are apt to be complicated by the development of thrush, and sometimes (as in two cases of Fischl, *loc. cit.*) may terminate fatally by producing gastro-intestine disturbances when they persist for too great a length of time. The term is used as a clinical one, just as it was used by Bednar; it represents a clinical picture, produced in different ways, and his description is just as true to-day as it was when he first published it.



*Treatment.*—Bednar says, “The disease cannot be shortened by any remedy, and in the absence of any dangerous complications its termination is always favorable; therefore it is superfluous to paste the mouth with mucilago or to wound it with caustics.” The disease is rare in this country, but it does occur. In the cases that I have seen I have remembered Bednar’s injunction, and they have all recovered without any untoward symptoms. Those complications that may arise must be treated as such, but it is unwise to do more than is already being done in the effort to repair damage resultant upon various causes. The most common complication is stomatitis mycosa, which can be easily avoided and just as easily treated. The general disturbances, dyspepsia and intestinal lesions, must be overcome and the general nutrition of the infant must be watched.

(To be continued.)

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## CLINICAL STUDIES ON THE PULSE IN CHILDHOOD.\*

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A CAREFUL and systematic study of the conjoint action of the heart and arteries—the pulse—in childhood is as yet an uncultivated field in pediatric literature; that, however, it has

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not been wholly neglected is evidenced by the fact that as early as 1822, Mayor, of Geneva, endeavored to derive practical benefit from the already ascertained knowledge of the foetal heart-beats, which he had accidentally discovered in 1818. Frankenhäuser, somewhat later, further tried to utilize this knowledge in diagnosing the sex of the foetus by the rapidity of the heart-beats, a diagnostic guide which has recently received the sanction of Jacobi, who states that he was seldom mistaken in predicting the sex when based on Frankenhäuser's principle. It is necessary, however, to make the examination when the pulse is not disturbed by causes due to change in either the mother or the foetus; the field opened by the earlier observers has not received much further attention, and to those engaged in the study of the maladies of infancy it is particularly noteworthy that, notwithstanding the importance which is attached to the pulse in adult life, its characteristics in infancy are almost unrecorded. Trousseau and Valleix have recorded their observations in relation to the pulse of the healthy infant, but, unfortunately, these gentlemen do not agree in their statistics.

*The pulse in health.*—To collect and collate a series of observations upon the pulse of the healthy infant from the moment of birth to the end of the first year is a task beset with difficulties; it is frequently most difficult to correctly record the pulse for the first hour after birth; indeed, it is often impossible, for at least the first ten days of the infant's life, to count the pulse at the wrist at all in most cases, or locate the pulsations at the præcordia; indeed, Lederbérder was only able to count the radial pulsations in six infants during the first minute of life.

Immediately after birth the pulse becomes much less frequent than during foetal life, when it ranges between 124 to 150 or more. Our own observations in the main agree with Smith and Jacobi, that within an hour after birth the heart's action becomes more regular and settles down to about an average beat of 136 per minute. Other observers do not agree with these figures. Valleix estimates the number of pulsations per minute, between ten days and twenty-one days, at 87; Trousseau places the figures for the first week of life as between

78 and 150, Gorham in the main agreeing with him. These figures, to us, seem too low, especially if we consider their disproportion to the foetal beat, and, furthermore, the fact that the new-born babe's heart must now carry on its independent circulation and, per consequence, must find exacting demands upon its contractile power, so that we can but conclude that the higher figures are more nearly correct. During the first eighth to quarter minute after birth the heart pulsations are not discernible, then they commence slowly, so that by the first half-minute they are probably not more than 10 or 12 per minute, in the second half-minute a vigorous child will cry and the pulse will become rapidly accelerated, even as high as 160, to shortly settle down to between 136 and 140. Immediately after birth the pulsations are alone to be ascertained by placing the hand over the præcordia; as the child becomes a little older,—one week,—the femoral or carotid is reliable to estimate the pulse-beats, or we may observe the basilar through the open fontanelle. Jacobi states that the beats of the fontanelle or the carotid can be distinguished and counted easily, up to a frequency of 240 per minute. The following table is prepared in order to present the relative frequency of the pulse at different ages and under different conditions.

It will be noted that sleep has the most remarkable effect in reducing the number of pulse-beats; it will also be noted that the figures in the main agree with Trousseau and Smith. The former states that the average pulse of the healthy infant between the first and second months is 137 per minute, from the third to the sixth month 128, and from the sixth to the twelfth month 120. (See Table, page 730.)

We also learn from these observations that the pulse is more rapid while awake,\* particularly if sitting or standing, and that muscular exertion or mental excitement may cause the pulse to become as rapid as in disease. In feeble children this acceleration is more marked; as the child grows the pulse is much less susceptible to all these influences, and we find the

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\* Although Goodhart recently (third edition, London, September, 1888, p. 583) stated that in several cases Newnham noted it to be three or four beats quicker during sleep.





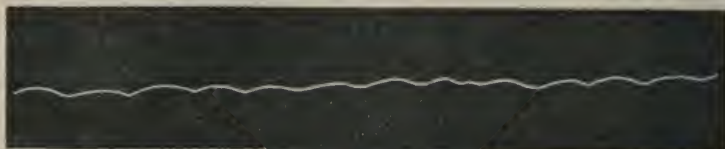
child of six years with an average pulse of 100, which at thirteen has become reduced to 88, closely approximating the adult rate of 72.

The frequency of the child's pulse is, however, not its sole difference from that of the adult, but it has certain other characteristics which are worthy of study.

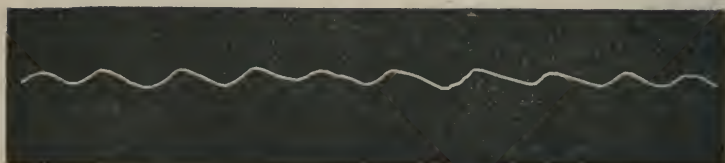
*Irregularity.*—The pulse of the young child is very apt to be irregular; this occurs whether the child is at rest, asleep, or undergoing active movements; hence the results furnished by an examination of the pulse do not offer any very definite characteristics and are not as pathognomonic as they are in the adult. With growth, this irregularity becomes less marked; it is, however, noticeable throughout the entire period of childhood. Conditions which will hardly perceptibly affect the pulse of the adult render the infant's pulse very irregular. Particularly will derangements of the digestive system, so common in infancy, show marked effect upon the pulse-rhythm. Constipation, diarrhoea, intestinal worms, dentition, meningitis, and anæmia all produce irregularity in the pulse-wave. Jacobi remarks that this irregularity becomes a puzzling factor in the differential diagnosis of incipient meningitis, with its pneumogastric irritation and anæmia.

Much may be learned by the graphic study of the pulse, notwithstanding the comparatively feeble beat, small volume, and less amplitude of the child's pulse; the cardiograph and sphygmograph present many interesting points worthy of study, although occasionally the sphygmograph will be very unsatisfactory. Goodhart goes so far as to state that with the sphygmograph he has met with little but disappointment in children. The most important peculiarity of the child's pulse revealed by tracings is that *dicrotism is absent*, and does not appear until the age of ten or fourteen years is reached. This peculiarity is well illustrated in the accompanying sphygmographic tracings taken from the thesis of Blache, which show these transitions in the pulse-wave and the age at which dicrotism commences to appear. In endeavoring to account for this absence of dicrotism we must remember that in a child there is not the same relation existing between blood-tension and arterial resistance; the child's pulse has not the same recoil,—

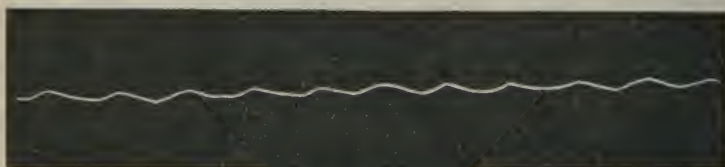
that is, the expansion—the systolic wave—is more marked and perceptible than the contraction.



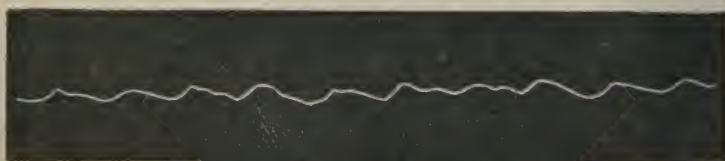
Normal pulse, child æt. three. Pulse 120.



Normal pulse, child æt. four. Pulse 92.



Normal pulse, child æt. seven. Pulse 80.



Normal pulse, child æt. eleven. Pulse 90.



Normal pulse, child æt. fourteen. Pulse 88.

To Hofmann belongs the credit of establishing the fact that the blood-pressure in the newly-born animal is very small; for example, in the dog at birth it is but ninety millimetres, whereas in the grown dog it has risen to one hundred and sixty or one hundred and eighty millimetres. It has also been



stated by way of explanation that the young child presents greater strength of the vessels to a relatively less strong heart, with a much shorter arterial circuit; for example, the common carotid in the newly-born is half the length of the descending aorta, but much less later in life, when the individual has attained its growth. Under these circumstances the blood is unable to distend the arteries sufficiently to allow a good recoil, hence the absence of dirotism. In confirmation of the fact that the short arterial circuit is an element in reducing the dirotic wave we have but to remember that Marey has shown that the longer the vessel the greater the dirotism. We now know that dirotism of the pulse is produced by the elasticity of the great vessels, especially when combined with low tension of the peripheral circulation and a sharp contraction of the heart, conditions which we also know do not exist in the young child. For example, it has been experimentally demonstrated that the adult kidney is much more permeable than that of the child; so we at once see that here is a decided interference to low tension of the peripheral circulation, as a marked resistance is offered to the arterial current.

In some of the so-called diatheses the relation of heart to blood-vessels is much altered; in rickets we find large arteries and a normal-sized heart. Under these conditions blood-pressure will be reduced—large arteries always have this effect—and low tension will be present.

Having now considered the two most marked characteristics of the pulse in early childhood—irregularity and absence of dirotism—and thus established our text, we will now proceed to study the pulse in *health* and *disease*. In order to do this systematically we may adopt the classification of Broadbent, somewhat modified to suit the character of the cases under consideration.

1. *The number of beats per minute, their regularity and equality.*—This we have already fully considered in the opening pages of our paper.

2. *The size of the artery*,—an important consideration in childhood.—The size of the artery is very variable in different children. All things being equal, a large artery will present a more decided impulse, but at the same time it is more com-

pressible; in a smaller artery compression frequently renders the pulse-wave much stronger. Undue smallness of the arteries is among the recorded abnormalities of the arterial system. Particular attention has been called to this condition by Virchow, to which we have already referred;\* Meckel, Morgagni, Rokitsansky, Lanceraux, and Bamberger record similar conditions. Cases of congenital smallness of the arteries often reach adult life; Gowers and Jacobi have so recorded them, and very recently Fraentzel† reports several cases of congenital narrowness of the aortic system, in two cases confirmed by autopsy.

The subjective symptoms are those of heart-disease, but the heart-sounds are clear, the second sound often accentuated, and the heart exhibits some dilatation. The symptoms are especially like those of cardiac overstrain, but develop in persons who have undergone no, or but slight, exercise. The hypertrophy of the heart begins in youth, is followed by dilatation, and finally by the signs of insufficient compensation. The arteries of the body are small, their tension high, and the face often strikingly pale.

3. *Tension*.—A healthy pulse of average tension stands out during the systolic wave and subsides gradually during diastole; should the tension be decreased, it is only at the apex of the systolic wave that we are able to feel the pulse in a young child. On the other hand, should the tension be increased, the pulse-wave is almost as marked as in the adult.

4. *Character of the pulse*.—The character of the pulse cannot be better described than by quoting from two Greek physicians,‡ Rufus, who considered it small and yielding, no perceptible difference between systole and diastole, and Herophilus, who states that it is deprived of sense or rule or proportion; they also in a very realistic manner illustrated its characteristics by metric measurements. Those who desire to pursue this subject further will find Duremberg's "History of Medicine,"

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\* "Diseases of Heart in Infancy," Keating and Edwards, 1888.

† *Deutsche Medicin. Wochenschr.*, 589, 1888.

‡ "Heart and Blood-Vessels in the Young," Jacobi; *Brooklyn Medical Journal*, March, 1888.

Paris, 1879, i. p. 224, worthy of perusal, and will be convinced of the fact that we have made but few advances in the study of the character of the pulse in childhood.

5. *The strength of the pulse* in childhood is never a constant quantity until about the age of fourteen is reached; before that time it has not established its equilibrium and is easily affected by the most trivial departure from health,—even a slight accumulation of flatus, for example, will convert the perfectly normal pulse of the infant into a rapid-running pulse that at an older period of life would be indicative of grave disease.

We may, in an off-hand manner, estimate the strength of the pulse by placing several fingers on the radial artery and one or two nearer the heart, and thus estimate the degree of pressure that will be required to obliterate the radial pulsation.

6. *The state of the arterial walls.*—Insomuch that atheromatous arteries are rare in children, it is hardly necessary to study the pulse as affected by atheromatous changes in the arteries. When atheroma does occur in children it is apt to be localized in the cerebral vessels, and does not extend to the entire arterial system, consequently it cannot have the same effect on the pulse as it does in the adult. The extent to which the child's vessels are liable to atheroma has been already fully elaborated by us, and space forbids a repetition.

*The pulse in disease.*—The pulse of the young is affected to a marked degree by the so-called functional disorders, and of these abnormalities in its action alterations in the rhythm are by far the most frequent. As we have before remarked, functional disorders of the heart's action, irrespective of inflammation or structural lesion of any kind whatever, constitute a frequent and an important class of cardiac diseases in the growing child.

*Alterations in the rhythm.*—A persistent frequency of the pulse is usually due to cardiac overstrain from continuous exertion; it is also a concomitant of neurasthenia and the abuse of certain articles, as tobacco, tea, coffee, or alcohol,—the so-called toxic cases. A fruitful source of palpitation or irritable heart in young boys is masturbation; persistent frequency is seen in anæmic and leukæmic cases, also in malarial poison-



ing. Alterations in the blood crisis, anæmia, leucocythæmia, melanæmia, and pernicious anæmia have as a constant attendant great irregularity of the heart and pulse; the younger the child the greater the irregularity.

*Paroxysmal palpitation* may occur and the pulse be very irregular,—from 75 to 200 within a few minutes. During the remissions of a paroxysm the heart may regain its normal rate. Position will exert a most decided influence upon the pulse-rate; while recumbent it will be much slower. Some of these cases present a peculiar flushing of the skin, due to vaso-motor change or innervation. Most typical examples of paroxysmal palpitation occur in Graves's disease and tachycardia: it is not at all unusual to meet a pulse-rate of 180 or 200, although the former condition rarely occurs in the young. We have recorded cases of exophthalmic goitre in young girls at puberty in whom paroxysmal palpitation was a distressing attendant manifestation of the disorder. We must, however, always bear in mind that a child may present extreme rapidity of the pulse and circulation, either constantly or paroxysmally, almost independently of organic disease, and that we must not attach too much importance to acceleration of the pulse-rate unassociated with conditions that in themselves merit careful study.

Neurotic influences often produce extreme palpitation of the heart, with a pulse-rate far above the normal; the pulse under these influences gives one the impression of but little onward movement of the blood; it seems more to vibrate than to pulsate. At a later period of life this condition is alarming, and sometimes is the precursor of death.

We do not find in children the same intense lividity and general capillary congestion of the face and extremities as we do in adults, but, on the contrary, intense pallor of the skin and mucous membrane exists; for a short time preceding death the pallor may become a light violet hue.

Palpitation in childhood sometimes produces angina pectoris, but it is not of the same variety as in the adult. It perhaps should be called pseudo-angina; but as the nervous system of the child is so easily impressed, we sometimes note the association of encephalic troubles and cardiac irregularity. We also note anæmia of the nerve-centres as a result of this irregu-

larity, lowered arterial tension, engorgement of the venous circulation, sleeplessness, somnolence, sometimes torpor or even coma.

*Infrequent, intermittent, and irregular pulse, reduplication or doubling of the heart-beats.*—The former condition may be congenital. We have now under our care a lad, aged sixteen, whose normal pulse is but 40 to the minute; during an attack of typhoid fever one year ago, the highest pulse-rate recorded in this case was but 60. Individuals with infrequent pulse enjoy robust health; indeed, infrequent pulse is perfectly compatible with the most vigorous health. Jaundice, renal disease, and some nervous disorders occasionally present an infrequent pulse. The literature presents cases of diminished frequency in which the children presented normal pulse-rates of 60, 40, and 32 per minute. Children who are the subjects of infrequent pulse are apt to present some form of cerebral disturbance; these may be of the nature of epileptiform or syncopal seizures or great mental excitability.

As we have before remarked, Flint calls attention to a curious form of functional disorder which would lead to the error of inferring infrequency of the heart's action from the pulse alone. This condition is characterized by the regular alternation of a ventricular systole, giving rise to a radial pulse, with one too feeble to be appreciated at the wrist. For example, Flint assumes the number of the ventricular systoles to be 70 per minute; in such a case the radial pulse would be 35 per minute. He has met with several cases of this disorder; the carotid pulse, however, accurately represents the heart's systole,—so that with auscultation we would note four sounds to each radial pulse. In this wise we may fall into the mistake of considering the case as one of reduplication of both the first and second sound. We have not as yet met such a case in young children, but have noted them in patients of eighteen years or over.

The *bigeminal pulse*—that is, a pulse in which the heart-beats and pulse-waves are in couples, a strong beat being followed by a weaker one—never, in our experience, occurs in childhood, although we have noted it several times in adults.

*Dropped beat* is rare except in association with organic valvular disease; its most frequent association is with mitral

stenosis. Broadbent agrees with the now generally accepted statement that there is never want of synchronous action of the ventricles, but that in these cases of dropped beat the right heart contracts effectually in both beats, while the left heart succeeds in raising the aortic valves in the first beat only. One can readily appreciate the value of this additional right ventricular action in mitral stenosis.

*Intermittent pulse* does not occur as frequently in childhood as it does in later years, principally because its main cause—fatty degeneration of the heart-muscle—does not often arise during the early periods of life; however, we will sometimes meet an intermittent pulse in a child of apparently perfect health; it also occurs after exhausting diseases. This very day we have examined a child, aged ten, convalescing from typhoid fever, in whom the pulse is markedly intermittent.

*Irregularity* may almost be said to be one of the normal characteristics of the infant's pulse, giving place to the regular rhythm as the child grows. Mitral regurgitation, affections of the respiratory apparatus, as bronchitis, pertussis, and emphysema, all produce great irregularity of the pulse. Nervous influences play a marked rôle in its causation, as do also certain toxic agents, as tea, coffee, and tobacco. In conclusion, we would draw attention to the fact that the irregularity of the pulse that accompanies mitral regurgitation is more marked than at any period of life, probably due to the fact that irregularity is so common at this early period of life.

*Reduplication or doubling of the heart-sounds.*—Reduplication of the first or ventricular sound may be heard in a perfectly healthy individual; it is, however, under these circumstances not constant, heard to-day and inaudible to-morrow.

It is also noticed in connection with heart-disease, though here, again, it may not be constant. Doubling of the second sound—arterial sound—is met with as the next most frequent abnormality of this kind.

Various explanations have been advanced in explanation of reduplicated sounds; some considering, as Da Costa does, that they are caused by an arrest of synchronous action in the right and left hearts; others that it originates in non-synchronous tension of the individual segments of the auriculo-ventricular valves.



In a few instances in children, with thin thoracic walls, we have been enabled to note a double impulse accompanying each systole. Bamberger, Leyden, and Skoda give similar testimony; also endorsed by Malbrane, Gerhardt, Friedrich, Rosenstein, and Roy. One of our cases was far advanced in the sequential lesions of mitral insufficiency. It is interesting to note the fact that with the abnormal beat there is no pulsation in the arteries. Paul, who believes in the theory of want of synchronous action of the two ventricles, endeavors to explain their non-simultaneous action by stating that when the mitral valve is markedly incompetent, the overfilled right ventricle is unable to empty itself completely during the systole, and the next instant, during the diastole, is again distended with blood, and so excited to renewed contraction; on the other hand, he states that the left ventricle takes no part in this second or abnormal contraction of the right heart,—that is, at least none that is appreciable to our hearing or our sense of touch.

Stearn,\* however, takes exception to the statement that both ventricles act simultaneously with the first of the double sounds, while the right acts alone with the second; he states that neither anatomical structure nor nervous supply will allow such a theory to be accepted, citing against it also the fact that there is no hemi-systole in the dying heart.

Further, in one of his cases there was a pulsation with each of the systolic sounds in the carotid artery, although there was none in the radial, and he is therefore obliged to conclude with Bozzolo that there are two complete systoles, one following the other very rapidly, as the cause of the phenomena. He explains the absence of the radial pulsation with the second beat by the fact that systole recurs so rapidly that there is no time for the left ventricle to refill, this being the more difficult as there was in his two cases—which he believes to be always present in such—tricuspid regurgitation; this would still further diminish the quantity of blood going to the left side, while the systemic veins and right auricle would be surcharged and ready to pour their contents into the right ventricle. A

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\* *Deutsches Arch. für Klinische Med.*, October 15, 1884; also *Edinburgh Medical Journal*, December, 1884.

further point militating against the statement that reduplication of the first sound is due to a want of simultaneous contraction of the ventricles, is the fact that the second arterial sound is not also doubled, for if the ventricles do not act together, the diastolic closure of the semilunar valves—aortic and pulmonary—should also be non-synchronous.

A rare form of reduplication is that in which the first sound is split into three parts, the *trommelschlag*, or drum-beat, of the Germans.

Potain has reported in cases of cardiac hypertrophy dependent upon “granular atrophy of the kidneys” a variety of reduplication of the first sound which he has designated *bruit de galop*, in which besides the normal sounds an additional sound preceding the first was noted; this was considered to be due to contraction of the hypertrophied auricles.\*

As we have already stated, reduplication of the first sound may occur entirely independent of any appreciable disease, so also may we meet *reduplication of the second sound*; most usually, however, it is an evidence of some cardiac disorder. Its cause seems to be alone want of synchronous closure of the aortic and pulmonary valves, consequently the two sounds do not correspond with each other. It seems possible to us, however, that the tension of the leaflets might occur in two separate and distinct movements, and thus occasion division of the second sound. We have met cases in which the division occurred over but one of the arterial orifices, most usually the aortic, which we are totally unable to explain except upon this hypothesis. We have the notes of two cases in which reduplication of the second sound was associated with organic mitral disease; we have also been enabled to verify its association with adherent pericardium, a condition that is met with even in the very young, as Behier† noted an infant of eleven months with an adherent pericardium, the result of chronic pericarditis.

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\* Those who desire to pursue this subject further are referred to a recent article by Cuffer and Barbillion, in the *Gaz. des Hôp.*, No. 36, March 24, 1887, p. 284.

† J. M. Da Costa, “*Amer. System Med.*,” vol. iii. p. 786; from Constantin Paul, “*Mal. des Cœur*,” Paris, 1883.

## THE PULSE IN VALVULAR DISEASE.

*Mitral regurgitation.*—Great irregularity of pulse is almost diagnostic.

*Mitral stenosis.*—Until heart-failure arises the pulse is small and regular, but as soon as compensation fails irregularity at the wrist arises. Although for a time the præcordial pulsations may continue to be regular, eventually extreme irregularity both in cardiac and arterial action arises, as Broadbent most aptly remarks; finally, the irregularity of the pulse and its lack of correspondence with the irregular heart defy description.

*Aortic stenosis.*—Should a child present this pulse in its typical form it is most characteristic, the wave is gradual in onset and long in duration, due to the narrowed condition of the valves; it is also small, and at once gives to the observer the impression of want of impact or strength. But rarely, however, do we meet this pulse in its purity, as aortic stenosis is so apt to be complicated by regurgitation at the same valve. We have elsewhere presented a case of pure aortic stenosis with pulse-tracing in a child, aged six, on whom an autopsy was held.

*Aortic insufficiency.*—If we exclude cases of congenital origin, primary regurgitation at the aortic valve is rare in childhood. Corrigan has made this pulse almost historic in medicine, and it is not necessary for us to dwell upon its characteristics now, particularly as we have fully elaborated its peculiarities in another publication.

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CONGENITAL STRICTURE, OR SPASM OF THE  
URETHRA, AS A CAUSE OF INCONTINENCE.  
ITS CURE BY THE SOUND.

BY CHARLES WARRINGTON EARLE, M.D.,

Professor of Pediatrics, Woman's Medical College; Obstetrician and Gynecologist, Cook County Hospital, Chicago, Ill.

I DO not expect in this brief article to present anything absolutely new concerning a subject of which so much has been written. But it appears to me that from my experience this method of treatment should be employed, as in my judgment



some cases are cured that have resisted all kinds of medical treatment and surgical operations. Some of the authors, in addition to speaking of the causes which are regarded as usually producing incontinence, speak of stricture of the urethra, but do not suggest a cure; and many excellent physicians after trying all the usual remedies do not examine the urethra, and abandon the case. I have been led to always explore the tube, and in several abandoned cases have made a cure by the successive introduction of the sound. The following cases illustrate what the sound will do in many cases where all other methods of treatment have failed.

CASE I.—B., aged eight years, had suffered from incontinence during the day for several years, causing his clothing to be constantly wet and attended by the disagreeable odors consequent. A few months ago he was circumcised by the physician then attending the family, but without relief, and he was now referred to me. The gland and prepuce were in good condition from the circumcision, but a No. 7 sound\* could only be passed to the membranous portion. A few days after I succeeded in getting into the bladder, and continued the treatment for about six weeks, using at last a No. 9. The result was all that could be desired, and he is now away on his vacation perfectly well.

CASE II.—C., aged fifteen years, has suffered with incontinence since a baby. Urine has been passed involuntarily two or three times during the night and several times during the day, particularly when exercising. He has been hired, scolded, punished, and doctored without relief. I gave him the bromides, tonics, belladonna, and cantharides without any benefit. July 26, 1886, passed sound. Slight constriction near neck of bladder, which yielded to slight but continuous pressure. Consulted me six or eight times during the following two months; used sound; recovery complete. He had passed through the hands of several excellent physicians and they all failed, because they neglected to explore the urethra.

CASE III.—J. J. H., a bright and smart fellow; parents healthy. When about sixteen months old he was taken with

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\* American gauge.

heat in head and flushed face. At these times he would be fretful and uneasy. The mother would bathe his head, which would relieve him temporarily. At the same time she noticed that he had erections, but did not appreciate their significance. About one year following these symptoms he had some kind of a stoppage of water, which the mother attempted to cure by domestic remedies, but failing, he was taken to a surgeon. Here he was treated for a period of two or three months, probably for adherent prepuce, but without relief. Another surgeon was consulted, who attempted therapeutical relief, with a like result. A general practitioner was the one next consulted. He frankly admitted that he failed to understand the case, but prescribed; no abatement of symptoms. Another gentleman of excellent reputation had him under treatment for three months. He claimed to thoroughly understand the case, but said little, and did no good. He was now taken to one of the oldest and most experienced men in this city, who declared his penis was all right, but gave medicine, with no improvement. Next a specialist on nervous diseases examined him, who, of course, pronounced it a disease of the nervous system, and assured the parents that the boy would certainly outgrow it. He looked up standard German and French authorities and declared that there was not a parallel case on record. By this time the little fellow began to notice the erection of his penis, and would cry out, "It is stiff, it hurts; cut it off and put it in the fire." This and like expressions were frequently made, and he was in such a condition that but very little rest was obtained during the night. He would go to sleep for perhaps one hour, then quickly waken, nervous and trembling. Things were absolutely unbearable, and at this time, about April, 1886, he came under my care. I found the glans penis congested and purple on retraction, and operated. Following the ordinary operation for phimosis and adherent prepuce, I passed a sound, and found, as I do in many cases, what appeared to be an obstruction from spasm of the circular fibres of the urethra. The sound was used a few times and the boy gained in every possible respect. About the middle of 1887 I passed a No. 11 and found but little constriction, and the past year has been one of enjoyment and freedom from nervous symptoms.

July 20, 1888.—The patient has been a little irritable for one week, but with this exception he has been perfectly hearty and jolly during the year. He is now six years old, and his nutrition is excellent.

The recital of these cases with the method of cure presents nothing new, although I am somewhat surprised that so few of the authors even speak of stricture as a cause of incontinence. Everybody, or at least everybody who is at all well versed in paediatric literature, examines the prepuce and glans penis of every case coming to him for this trouble, but I am afraid that many excellent practitioners do not examine the urethra. Not every case has spasm of the urethra, but many do. Not every case can be cured by the sound, but many who have received every other form of treatment and have not been relieved can be cured by this simple process. The pathology of these cases is not well defined in my mind. Is this a congenital difficulty or acquired? Is this constriction due to reflex causes? These questions demand future consideration. I only present a few clinical facts. In closing, however, I may say that, considering the vast number of congenital defects which we know take place, I see no reason why there cannot be in this part of the body certain deficiencies which have always existed, and until cured remain the exciting cause of this troublesome disease.

Let me again repeat, that in every case of incontinence which has resisted the ordinary routine treatment, use the sound. This single instrument has performed more cures in my practice than all the drugs which I have prescribed, and as many as have been cured by operation for phimosis, or elongated, contracted, and adherent prepuce.

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## DIPHTHERIA AND SEWER-GAS.

110 WEST THIRTY-FOURTH STREET, NEW YORK, November, 1888.

EDITOR OF THE ARCHIVES OF PEDIATRICS:

DEAR SIR,—In the November number of your journal Professor Charles Warrington Earle, M.D., publishes an



article on "The Influence of Sewerage and Water Pollution on the Prevalence and Severity of Diphtheria." On its very first page (p. 657) he refers to what he erroneously presumes to be my opinion on that subject in the following words: "Jacobi says that cases of diphtheria which are traced to exhalations from sewers or even to filthy habits of life are very frequent. This opinion, especially in regard to sewerage, has been reiterated by scores and hundreds of physicians. It represents the prevailing idea of American physicians."

Now, Mr. Editor, in my very first paper published on the subject ("Diphtheria and Diphtheritic Affections," *Amer. Med. Times*, August 11, 1860, p. 96), I looked for the source and epidemic occurrence of diphtheria in contagion to the exclusion of any and all other alleged causes.

On page 34, *et seq.*, of my "Treatise on Diphtheria" (1880) you may read these remarks: "Cases of diphtheria which are traced" (I might have said attributed) "to exhalations from sewers (or even to filthy habits of life) are very frequent. Yet typhoid is attributed to the same causes. So is dysentery. Can these foul exhalations produce alike diphtheria, typhoid, and dysentery? Do these diseases arise from a common poison? Or is the poison of a treble character, so that a part may give origin to diphtheria, the other part to typhoid, the third to dysentery? In a house in West Twenty-second Street, between Eighth and Ninth Avenues, in New York, three children and a female help were taken sick, two with dysentery and two with typhoid, in the course of a month. In the same house, in two of the children, diphtheritic sore throats were of frequent occurrence.

"Have we to deal, in such occurrences, with special influences, or only with a lowering of the standard of health, thereby affording other morbid influences an opportunity to exercise their power?"

I then quote (p. 35) the results of the researches of the Board of Health of the State of Massachusetts, the third of which reads as follows: "A positive connection between diphtheria and filth cannot be verified, although the latter adds to the evil influence of moisture." This statement I call (p. 36)

"modest and sensible," and one "for which we have to be thankful."\*

In a paper on the "Therapeutics of Diphtheria," read before the Medical Society of Philadelphia, May 23, 1888, which has been copied by half a dozen medical journals, I made the following remarks (reprint, p. 1): "Diphtheria is a contagious disease. There is probably no spontaneous origin of diphtheria, any more than there is a spontaneous origin of cholera or scarlatina;" and again (p. 3): "When an attack of diphtheria has made its appearance, it is well enough to examine the hygienic condition of the house, *with its deteriorating influences on the general health of the inmates, and to look after the source of the case* in the persons of friends, attendants, and help."

In my "Remarks on the Nature and Treatment of Diphtheria," made by invitation before the Section of Diseases of Children of the British Medical Association, August, 1888 (*Brit. Med. Journ.*, September 22, 1888), there are found the

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\* In "Diphtheria spread by Adults" (*New York Medical Journal*, September 24, 1884) I say, "No permanent spontaneous generation is claimed, or has been proven; for cholera, scarlatina, or variola. Nobody looks for their primary cause in moist walls of houses, dry dust of streets, in the prevalence of previous house endemics of typhoid fever, measles, or other eruptive diseases; in bad ventilation; in the odors of hospital wards; in putrefying kitchen refuse; or in the exhalation of sewers. But both medical men and laymen are found to be inexhaustible in accusing and condemning all those detrimental influences, not as being predisposing elements, not because of their injurious influence on health in general and on the condition of the mucous membranes in particular, but as the main and frequently sole causes of diphtheria. In the minds of many physicians, diphtheria is intimately linked with sewerage; with them the trap of the water-closet and the plumbing of the cellar are the first objects of attention; the patients' and their families' fauces and nares coming in for a relatively smaller part of their care. If they would pay more attention to the direct sources of contagion, which is something understood and definite, than to the indefinite and unproven presumption of specific poisons in the outlets of the house, or the inlets from the sewers, their etiology would be something more positive in a great many cases."

"I do not mean to say that the house hygiene ought not to be looked after by the physician in every case of sickness, but the more I have seen the more it has occurred to me that we may live to reach the conviction that there is but *one* predisposing element, viz., a *sore mucous membrane*, and but *one* cause of an individual attack of diphtheria, viz., *direct contagion*."

following sentences: "*Foul air and sewer-gas do not create diphtheria*; they do create dysentery and typhoid, or such a condition of general ill health and malaise as to afford the diphtheritic virus a ready resting-place. There were plenty of malodorous privies and foul smells fifty years ago, but no epidemic of diphtheria. Besides, and mainly through the careful observations of English physicians, such as are contained in Dr. George Turner's report on diphtheria in lower animals and many others, the sources from which diphtheria may come are very many. Pigeons, fowls, turkeys, chickens, pheasants, cats, horses, sheep, cows, are just as many sources of diphtheria for man. Foods of all kinds, vegetables and milk, will transmit it. It sticks to furniture, floors, and wall-paper, railroad-cushions and school-desks. No spontaneous generation is required to explain its ravages."

These extracts, Mr. Editor, ought to prove that Dr. Earle does not stand alone with his views so ably discussed in your journal. Like him, I have always lamented the disposition of so many of us to look for the cause of an individual case of diphtheria in the wrong quarter. Like him, I have often found a professional brother inspecting traps and cellar floors, while the rest of the children of a family were permitted to play in the rooms and about the beds of those affected with the malady. Like him, I stand aghast at the searching, for possible bacteria, of the grounds on which a new wing is to be erected, while in the very same hospital of one of the largest cities in Europe a single large ward has always contained, and is still containing, from half a dozen to a dozen cases of diphtheria distributed amongst all classes and varieties of miscellaneous diseases.

At all events, I meant to request the privilege of correcting an erroneous impression in reference to this question, which is among the most important ones for both theoretical and practical reasons. I have never believed, nor do I believe now, that sewer-gas *per se* is a cause, or *the* cause, of diphtheria. A sewer or a trap can convey diphtheria only when that particular sewer or trap has been infected with diphtheritic poison.

Yours very sincerely,

A. JACOBI, M.D.



## Current Literature.

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### I.—HYGIENE AND THERAPEUTICS.

Raudnitz: *The Regulation of Heat in New-Born Infants.* (*Arch. di Patol. Inf.*, July, 1888.)

In this work the author has given a summary of all that science has thus far adduced upon this subject. The opening paragraphs refer to the thermic economy of the fœtus, the temperature of the fœtus at birth, and the regulation of heat during the first week of life, in conformity with the views of Barendsprung, Schäfer, Wurster, Sommer, Lépine, Jacobi, Bonner, Preyal, Luys, and others. The researches of Barendsprung and Schroeder have called attention to the fact that the pregnant uterus has a higher temperature than the non-pregnant one. Cohnstein and Fehling have found this a means of deciding whether the fœtus is alive or not, the temperature of the uterus being higher than that of the vagina when the fœtus is living. During the first few days of life there is a decided fall in the temperature, and W. F. Edwards has concluded that new-born children have a great tendency to become chilled rapidly. Barendsprung found that a new-born child lost  $0.83^{\circ}$  after its first bath, but on the following day the loss of heat after the bath was only  $0.5^{\circ}$ . Children who are born prematurely have a lower temperature than those who are of good constitution and are born at term. Investigations concerning the conditions of heat during the second week of life have not been abundant, chiefly for the reason that in maternity and foundling hospitals the children are not so available for experiment as during the first week. Schütz and Eröss have found, however, that new thermic conditions were inaugurated during the second week; Loechner holds that only in the fourth month are those factors modified which determine the thermic economy. Demme states that after the first year of life the thermic oscillations are less decided, the temperature is more independent of external influences, and begins to be governed by the same rules which obtain in the adult. During the epoch of dentition the thermic constancy is decidedly disturbed, and there are frequent deviations from the normal physiological curve. Concerning the physiological thermic curves during the first period of infancy, the author closes the first portion of his work as follows: "The fœtus in utero produces heat autochthonously,

as is shown by an examination of the foetal products of material exchange, and especially by the increase of carbonic acid in the efferent umbilical vessels. There is still uncertainty, however, as to the method of determining this autochthonous production of heat, which constitutes the difference in temperature between the mother and the foetus. After birth, in consequence of the comparative chilliness in the surroundings of the child, there is a decided lowering of the temperature. Between the fourth and sixth days of life there is apparent in robust children a decided fluctuation in the daily thermic curve."

In the second part of this work the author speaks of the thermic mobility during the first few days of life, and in connection therewith examines, (1) the pathological conditions of the decline in temperature; (2) the insufficient alimentation and the frequent introduction of food as the cause of the decline in temperature; (3) the consecutive action of the two factors which determines the course of the temperature as a cause of the decline in the temperature; (4) the volume of the body as a cause of decline in the temperature; (5) the dispersion of heat by the skin as a cause of mobility in the temperature of the body; (6) the incomplete development of the apparatus which regulates the body temperature as a cause of thermic mobility. All the questions relating to these propositions are discussed, and a great number of cases in the author's personal experience cited in proof of the positions which he seeks to establish. As a profound disquisition upon the subject in hand this work is to be highly recommended.

A. F. C.

**Smith, Eustace:** On the Treatment of Habitual Constipation in Infants. (*British Medical Journal*, July 7, 1888.)

Sluggishness of the bowels in infants is a common source of trouble in those who have been brought up by hand; but infants at the breast are not exempt. A deficiency of sugar in the breast-milk, or a milk the curd of which makes an unusually firm clot, will often cause habitual torpor of the bowels which may be quite obstinate.

Improper or inappropriate feeding is usually the cause of constipation. Any food which overtaxes the child's digestion and thus burdens the alimentary canal with undigested residue will excite a mild catarrh of the intestinal mucous membrane. The fecal matter, rendered slimy by this secretion, affords no sufficient resistance to the contractions of the muscular coat, so that this slips ineffectually over the fecal masses.

Another cause of constipation is dryness of the stools,—generally due to insufficiency of fluid taken. Whether it be the original cause of the constipation, it cannot continue long without affecting injuriously the peristaltic movement of the bowel. As the colon grows accustomed to distention the muscular contractions begin to flag. If the infant is badly nourished the trouble is aggravated by atony of the muscular walls, and the expulsive force at the disposal of the patient is seriously impaired. A baby whose motions are habitually costive knows well the suffering which undue distention of the sphincter will cause, and often yields to the desire to go to stool only when it is no longer possible for him to resist. Another form of constipation in infants is induced by opium, as given in soothing syrups and other narcotic preparations. In treatment it is well to bear in mind that the symptoms may be due to the action of a narcotic.

In remedying this condition attention to the feeding and clothing of the baby is of little less moment than the use of drugs. When the child is at the breast a teaspoonful of syrup given three or four times a day before meals will quickly restore the normal regularity. If the stools are hard and dry we should see that the child takes a proper amount of liquid with his food, and a dessertspoonful of some natural saline aperient water, given at night, aids the return of the natural consistency to the stools. Constipation which is due to mild intestinal catarrh is owing, no doubt, in great measure, to overabundant or improper feeding. Still it does occur in infants whose diet is regulated with care and judgment. In them the intestinal catarrh is frequently the consequence of exposure of the lower limbs and belly. When it is, our first care must be to protect the infant's sensitive body by proper clothing. The dietary should then be regulated with due regard to his power of digestion. Excess of starch must be corrected. Mellin's food is especially valuable in cases where there is a tendency to constipation, as in many children it has a very gentle laxative effect; it is well when giving it with milk to add some thickening material, such as barley-water. A certain variety in the diet is of importance where the digestion is temporarily impaired, and therefore some other food may be alternated. If the child has reached the age of ten months it may take beef-tea or veal-broth once a day, and with this the author allows sometimes a vegetable, such as asparagus, well boiled; also, a teaspoonful of oatmeal sweetened with the same amount of malt extract may be used.

In addition to these measures, friction judiciously applied may very materially quicken the peristaltic action. The rub-



bing should be gently done every morning, and should be commenced on the right side of the abdomen and follow the course of the colon.

Special measures of treatment consist of suppositories and injections and remedies given by the mouth.

Suppositories and injections aim at immediate evacuation, and in no way tend to promote more regular action in the future. The injection of forty to sixty drops of glycerin into the bowel is useful in clearing the way for future treatment, but there its value ends. The same is true of soap suppositories. Injections of soap and water or other liquid are of service when given only occasionally. They are distinctly hurtful when given daily.

For the permanent cure of habitual constipation remedies given by the mouth are greatly to be preferred, but strongly-acting purgatives are worse than useless. The aim should be to find the smallest dose which will awaken a normal degree of energy of peristaltic action, and to give this dose regularly so as to induce a habit of daily evacuation.

The author's favorite drugs are nux vomica, belladonna, and senna, given in combination; cascara with belladonna; sulphur and sulphate of soda, the last when the stools are particularly dry.

**Raven:** "Paddling." (*British Medical Journal*, July 21, 1888.)

Paddling is an amusement indulged in by children at the sea-side. They are often immersed in cold water nearly as high as their hips, while a hot sun is beating on their heads. A common result is a condition resembling heatstroke. The child may have a febrile movement with headache, nausea, vomiting, intolerance of light, and even peritonitis may develop. Many are not so seriously affected; but there are numbers, doubtless, who are languid and poorly, suffering from headache and malaise from this cause, while the parents account for the disturbance by some theory entirely incorrect. The treatment which the author employs consists in the application of hot mustard and water to the extremities, while douches of cold water are applied to the head. To relieve congestion of the internal organs a brisk purge is also needed.

**Richter:** Goat's Milk. (*British Medical Journal*, July 7, 1888.)

Some observations in an article on this subject in the *Berliner Klin. Wochenschrift* are quoted which draw attention anew to this article of food.

The best substitute for the mother's milk is that of some animal.

Cow's milk is not easily digested by infants, and it also may harbor the germs of tuberculosis. Boiling will destroy these germs, but it is a drawback to the use of milk that it should be regarded as a suspicious food.

In Richter's opinion goat's milk is superior to that of the cow. The goat is an inexpensive animal, and is rarely affected by tuberculosis. Its milk is more easily digested by infants than cow's milk, for it contains much less casein. The author thinks that it is strange that a source of milk so free from suspicion and so easily procurable as the goat should be so much overlooked.

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## II.—MEDICINE.

Quisling : Studies concerning Rachitis. (*Arch. f. Gyn.*, Bd. ix. H. 4 and 5.)

(This monograph upon a most important subject is a *résumé* of the vast deal of work which has been expended upon the subject.)

I. The idea which the disease rachitis represents.

In spite of much investigation the pathogenesis of this disease is still obscure, but notwithstanding great differences of opinion the disease is recognized with considerable uniformity as a chronic constitutional disease which pertains eminently to childhood, the necessary symptoms of which are certain peculiar changes in the developmental process of the skeleton, these changes being accompanied by a series of functional disorders in the nervous system, the digestive canal, and the respiratory system. Acute rachitis, in which all the bony lesions are developed in the course of a few weeks, has been described and defended by a number of authors as a separate variety of the disease, but others regard such cases as probably not rachitic, the only true form of the disease being the chronic one.

II. The nature of rachitis.

This is a disease of childhood. It may arise during foetal life, but that is exceptional. Kehrer, Bohn, and others recognize a foetal and a congenital form, both beginning during foetal life. These two forms differ only in the fact that the former is cured during foetal life. The congenital form includes cases in which rachitic symptoms are present in the new-born child, either in their incipiency or in full development. It is of much more common occurrence than the foetal form, and may begin at any period of foetal life. The evidences of ra-

chitis in the new-born were found by the author, in the investigation of a large number of children, in the following relative frequency: enlarged fontanelles, soft and impressible cranial bones, breast rachitis, rachitis of the lower extremities. The approximate age at which rachitis occurs was determined by an analysis of one thousand cases of the disease which were recorded at the children's polyclinic in Christiania. The result of this analysis was that 47.6 per cent. of the cases occur during the first year of life, 42.1 in the second, and 7.4 in the third. A comparison of the statistics with those of Denmark, Germany, France, and England shows, in brief, that the very large majority of all cases which are brought to public institutions for treatment appear for the first time between the ages of six and eighteen months. It must be remembered, however, that in most of these cases the disease was well advanced when seen for the first time, so that the determination of the time when it began is far from accurate. Cases are recorded in which the disease has developed as late as the eleventh and sixteenth years. These are extremely exceptional, and the opinions of Boerhaave, Ritter, Rehn, and Kassowitz may be considered reliable that it does not occur, as a rule, after the third year. As to the frequency of the disease, of 7369 sick children in Christiania, 1000 were rachitic, 13.5 per cent. Of those who were sick in the first three years of life, 19.94 per cent. were rachitic. In Berlin the proportion is about 25 per cent.; in Frankfurt and Dresden, 25; in Prague, 8.64. In Vienna, Kassowitz found 10.5 at his polyclinic, 26.2 of those who presented themselves for vaccination, and 59 in his private practice. In London 2.36 per cent. of all children treated in the hospitals were rachitic, and 30.3 of all hospital cases under two years of age. In Philadelphia, Parry reported 28 per cent. of all children between one month and two years of age as rachitic. In Athens, Rehn found only one rachitic child among 1500 sick children.

Whether this disease is or is not a constitutional one is an important question, and must be decided in the affirmative if one is guided by the presence of several important symptoms, and also the fact that the skeleton, the digestive and respiratory tracts, the skin, nervous system, spleen, etc., are implicated. Whatever system or apparatus may be involved, the condition is usually one which is identical with or analogous to the chronic inflammations.

### III. The causal conditions of rachitis.

The great frequency of the disease suggests the possibility that it may be inherited. Many cases are recorded in which it appears to have been such, and the authority of such names as



Niemeyer, Steiner, and Hennig supports the doctrine that it is inherited to a great degree. Jenner, Baginsky, and Kasso-witz hold a contrary opinion. Its exact relations to syphilis do not seem to have been definitely determined. Parrot believed that it was a direct derivative of syphilis. Baginsky has found evidences of syphilis in six per cent. of all rachitic children. Other writers see strong evidences of relationship in the symptoms of the two diseases, while others deny that they are at all allied. The same uncertainty exists with reference to the interdependence, in an etiological sense, of rachitis and tuberculosis. Bad air is one of the most important factors in its production. It is much more common in northern latitudes than in the tropics. Bad hygienic conditions in general may be considered the most important elements in its causation. Parrot has stated his views in reference to the causes of the disease in the following propositions :

1. Defective means of nutrition in new-born children is an efficient cause of rachitis.

2. By defective nutriment is meant any nutriment exclusive of mother's milk before a child is a year old.

3. The nutriment is also defective when it is given too often, or when the nurse is unhealthy.

4. The surest means for producing rachitis in a baby are the use of gruels, bread soups, and other similar articles of diet.

5. The disease is frequently caused by the use of nursing-bottles with long tubes.

6. The same is true of a mixed diet.

7. Too early weaning is also a cause.

As to sex, statistics seem to indicate that boys are more frequently the subjects of this disease than girls, though this is probably not so in congenital rachitis.

A. F. C.

Miller : The Earliest Symptoms of Hereditary Syphilis. (*Jahrb. f. K.*, xxvii. 4.)

The recognition of the earliest symptoms of congenital syphilis in small children, in default of any history pointing in that direction, is often surrounded with great difficulty, for they may appear as pemphigus, roseolæ, maculæ, papulæ, rhagades of the mouth and anus, excoriations and ulcers of the skin, rhinitis, laryngitis, gingivitis, ulcers of the tongue, pseudo-paralysis of the extremities from osteochondritis, etc. The difficulty is complicated by the combination of various symptoms which is not infrequent, different portions of the skin showing entirely different phenomena. The fact that miscarriages so very frequently result from the marriage of syphilitics throws light upon the cognate fact that many in-

infants who are the subjects of congenital syphilis are thin and atrophic; in fact, the author states that he has come to consider this atrophic condition as a most important suggestion that syphilis is present, and an indication that the child should not nurse any one but his mother. If syphilis be latent the symptoms are likely to appear in the course of the first two months. In syphilitic infants it is noticeable that the navel stump, instead of dropping off on the fourth or fifth day, as is normal, delays until the second or third week, exposing them to navel inflammations and septic infection. Icterus of the new-born is greatly prolonged in such infants, the skin is undeveloped and tender, as are also its underlying connective tissue and sweat-glands. Tissue-changes are sluggishly accomplished, oxidation is defective, the tissues in general are poorly nourished and deficient in vitality, and hence it is not surprising that the external symptoms of syphilis do not appear as early as in those children who are more mature and in better physical condition. Zeissl, Kassowitz, and the author have found by the study of large numbers of cases that the external phenomena appear in more than fifty per cent. of them during the first month. In fifty-eight per cent. of the author's cases rhinitis appeared as the first symptom of syphilis, and pemphigus in twenty-five per cent. Should a new-born infant suffer from nose-bleed it would be very suggestive of hereditary syphilis or diphtheritic rhinitis. These two diseases may be readily confounded and are not uncommon in foundling asylums. The diagnosis will be clear enough within one or two days if diphtheria be present. If the nose be sunken in, no other suspicious symptoms are necessary to make a diagnosis of syphilis. If pemphigus be of syphilitic origin in a given case it is prone to affect the skin of the palmar and plantar surfaces, and the fingers and toes; it also attacks the folds in the groins, the axillæ, and the neck. Syphilitic pemphigus is a far more dangerous condition than the ordinary variety and may speedily end fatally, the removal of large portions of skin and subsequent ulceration producing fatal exhaustion. Syphilitic pneumonia in premature infants is of no diagnostic value in determining syphilis, and is differentiated with great difficulty from other forms of pneumonia. Simple desquamation of the skin is common to all new-born infants, and even if rather free, cannot by itself be taken as an evidence of syphilis. The desquamation of epithelium upon mucous surfaces is also a normal process, but may develop into the formation of fissures, ulcers, erosions, and aphthous formations. If syphilis is present such conditions are important means of diagnosis, but they often exist apart from syphilis. Ulcers of the mouth,

the gums, the palate, fissures of the nose, the lips, and the anus are well-known conditions with and without syphilis. Laryngitis is a symptom in seventeen per cent. of cases of syphilis, but in very many instances it is only the result of a cold. The author does not lay so much stress upon cranio-tabes as a symptom of syphilis as does Parrot. He thinks it is only an evidence of poor nutrition, and that the bone will quickly harden if the child is properly fed. It is in his opinion more frequently an evidence of rachitis than of syphilis. Disease of the lymphatic glands has not the same significance in hereditary that it has in acquired syphilis. In twenty-nine per cent. of the author's cases there were, however, swellings of the glands. This was considered the result of local irritation rather than one of the effects of the poison which had permeated the system. The maculo-papular eruption was observed to be the most frequent symptom of congenital syphilis. It appeared either upon the skin or the mucous membrane in seventy-four per cent. of the author's cases. It was the first symptom in twenty-four per cent. The lower extremities were most frequently involved, though it sometimes appeared first upon the hands, the fingers, and the face. It came in single spots, far from each other, the color varying between a cherry-red and a dark violet. It is to be distinguished from the exanthema of rubeola by its darker color and the smaller number of spots, also by its frequent appearance upon the feet, and not upon the face. There is also an absence of fever and of redness of the pharynx and hard palate, also of the other distinctive symptoms of measles. An erythema is suggestive of syphilis only in cases in which true syphilitic papules begin to effloresce upon it. The author agrees with Parrot that the vesicular eczematous form of congenital syphilis is not seen in small children, though simple eczema may occur among syphilitic children. Pustular syphilides were never seen, but in a few cases they were met with in children two or three months old. Onychia and paronychia were seen in twenty-three per cent. of the cases, and in four per cent. they were the earliest symptoms; other affections of the finger-nails were of rarer occurrence. There is nothing peculiar about the expression of the face in syphilitic infants, a pinched and wan appearance being common to all who are premature and atrophic. Pseudo-paralysis of the extremities is extremely characteristic of congenital syphilis, and in the absence of other symptoms may be considered diagnostic; it is of rare occurrence, however, and was seen in only seven per cent. of the author's cases, the upper extremities being affected more frequently than the lower.



Cerebro-spinal paralysis is yet more rare, and when it occurs no voluntary motion is possible, while in pseudo-paralysis motion is possible, but is always attended with pain in the ends of the bones or the joints.

A. F. C.

Somma: Primary Nasal Diphtheria in Children. (*Jahrb. f. K.*, xxviii. 2.)

Nasal diphtheria rarely occurs as a primary affection, though it is common enough as a secondary development from the pharyngeal form. The author believes that when it occurs primarily it is usually an indication that there has been general infection of the organism, the local eruption being one of the symptoms. The varying degrees of severity of the disease are explained by difference in potency of the infective agent, and to this may be added the varying degrees of resistance of the tissues to the localization of the disease, and the varying degrees of resistance of individuals to the infective agent. The author believes, however, that in all cases of diphtheria which are primarily nasal, whether light or severe, there is an expression of a diphtheritic general infection. Age and sex have nothing to do with this localization of diphtheria. On the other hand, on account of the abundant blood-supply in the nose, on account of its continual contact with the air, and the infectious elements of the latter, which suspended in the nasal mucus are often in contact for a long time with the nasal mucous membrane, it is especially predisposed to the reception of infection. There is nothing peculiar about the anatomical condition of this variety. Symptomatologically it may be divided into a mild and a severe form. The former is without fever, without great disturbance of the general condition, and is characterized only by the presence of the local deposit in one or both nostrils. The severe form always has a preliminary febrile stage. At first there appears to be only a simple catarrhal coryza, but soon membranous deposits appear upon the nasal mucous membrane, the submaxillary glands swell, there is cough with occasional attacks of suffocation, the eyes and ears are involved, while the pharynx and larynx remain unaffected. In some cases the patients die after a few days with symptoms of general sepsis, in others the exudate is eliminated and recovery occurs, or the general symptoms remain in spite of local improvement and the cases end fatally, or the process may attack neighboring organs with an equally fatal result. The diagnosis is usually easy, excepting in rare cases in which the deposits are located so far back in the nasal cavities that they are not discovered. In such cases rhinoscopy is sometimes of avail in not very young children. The prognosis in

the mild form is good, but in the severe form very bad. The treatment consists in irrigation of the nose with salt water, or one-per-cent. solutions of resorcin or salicylic acid, in the introduction of iodoform-vaseline, one to twenty, or in the insufflation of benzoic acid, alum, and tannin. Injections may also be made every three hours with solutions of acetic acid, lactic acid, or sublimate, one to four thousand. In the latter stages of the disease ointments of white or red precipitate may be used. Internally the carbolate of quinine in small doses may be given, and stimulants if collapse appears imminent.

A. F. C.

Engelsen: The Causes of Irregular Positions of the Teeth, and the Significance of Rachitis in that Respect. (*Jahrb. f. K.*, xxviii. 2.)

The author studied one hundred and forty-nine casts of jaws in which the teeth were irregularly set, and some additional cases in which the jaw showed marked rachitic changes, without irregular setting of the teeth. In sixteen cases the cause of the irregularity was persistent milk-teeth, in four cases there were superfluous teeth, in thirty-one there was irregular arrangement for which no cause could be given, in ninety-eight the peculiar changes of rachitis were present, and in all of them the teeth did not have sufficient room for proper development. The teeth which were most commonly out of place were the two large incisors, which, in consequence of lengthening and lateral compression of the jaw, were projected strongly forward and inward. The most marked evidence of rachitis consisted in a bending inward of the upper jaw near the second small molar; the evidence which was next in frequency was a high and narrow palate. In fourteen of the seventy-five cases in which there were undoubted indications of rachitic changes in the jaws, rachitic changes in the teeth were also present. In the twenty-three other cases the bending of the jaw and the deformity of the palate were not sufficiently pronounced to serve as diagnostic symptoms. On the lower jaw the most frequent change was that which gave it a short and polygonal appearance. In thirty cases the lower jaw was bent inward at the second bicuspid. It would seem that about half of the irregularities in the disposition of the teeth were due to rachitic changes.

A. F. C.

Heller: Lung-Diseases in Congenital Syphilis. (*Jahrb. f. K.*, xxviii. 2.)

Three different forms of lung-disease occur in connection with congenital syphilis, any one of which may occur alone,

combined with another, or with both the others,—gummata, white, and interstitial pneumonia.

1. White pneumonia in its uncomplicated form is rarely seen, is found only in still-born children, or in those who have died shortly after birth. It is most frequently seen in premature children with unmistakable indications of congenital syphilis. The lungs are large, the impression of the ribs being well marked; they are white or grayish-white, sometimes of a reddish marbled appearance, and are inflatable only in the slight degrees of change. The microscope shows that the intestinal tissue is normal, the alveoli being filled with epithelial cells which have begun to undergo fatty degeneration and destruction.

2. Interstitial pneumonia, in the mildest cases, presents a barely perceptible cell proliferation and tissue hypertrophy in the vicinity of the vessels and bronchi.

In the well-marked cases the lungs are large, pale, or dark red, very dry, but capable of inflation; the lung-tissue has a rough feeling, and the interlobular tissue is much extended. The microscope shows the bounds of the interlobular tissue to be greatly widened, and those of the alveoli to be correspondingly contracted. The widening of the meshes is caused by the increase of the connective tissue, with abundant cell infiltration, and no increase in the elastic fibres. In many cases there is a decided increase in the number of capillaries. No evidence of endarteritis was found in the lungs, but around the vessels was frequently found an increased development of connective tissue, and sometimes also around the bronchi. The extent of the changes which take place is variable. The author found associated with this condition hypertrophy of the right heart, and ecchymoses of the pleura and pericardium. These changes in the lungs are to be found in connection with other unerring indications of syphilis, and in cases in which syphilis in the parents has been determined, so that one is justified in looking upon interstitial pneumonia as a change which is based upon congenital syphilis. The disease usually begins during foetal life, and may have made extensive progress at the time of birth, being a means of hastening death. In mild cases the patients may recover, but the interstitial changes are apt to continue with the development of the lung, and cause contraction of the organ should the subject survive until adult life. Children who have had this disease seem predisposed to acute inflammatory diseases of the lungs, bronchi, and pleura; they are also apt to be very poorly nourished. Children who have this disease are not apt to have tuberculosis, as the capillary ectasis, which is an associated condition, seems to



give protection against it. The phenomena of the disease during life are not known to the author. They should be investigated, that the patients may be promptly submitted to antisyphilitic treatment. White and interstitial pneumonia are very important in a medico-legal sense, for the presence of lung-tissue which is inflatable may excite groundless suspicions that infanticide has been committed. A. F. C.

Moncorvo: Etiology of Sclerosis *en Plaques* in Children. Influence of Hereditary Syphilis. (*Jahrb. f. K.*, xxviii. 2.)

Multiple sclerosis of the spinal cord is of very rare occurrence in children. The author found records of only seventeen cases in the literature pertaining to the subject, and he had had personal experience with four additional cases. He was able to confirm Charcot's statement that the disease was more common in females than in males, twelve cases occurring in girls and nine in boys. The disease may begin in very early life, having been observed as early as the seventh month, while the greater number of cases occur between the third and fourth years. It was found difficult to prove the influence of heredity, and yet a certain relationship between antecedent infectious diseases and disseminated sclerosis could not be overlooked. The investigations of Marie and Jendrassik show that the infectious or poisonous matter penetrates the circulation, and directly injures the vascular system. The process begins in the perivascular spaces, gradually implicates the surrounding tissue, and causes atrophy and destruction of the nervous elements. The author does not accept these views unreservedly, with regard to the formation of sclerotic deposits in connection with the febrile infectious diseases, but he believes that syphilitic virus may be a means of causing the disease. A case occurring in a child three years of age is narrated, in which the symptoms of disseminated sclerosis were well marked, and there was also a history of hereditary syphilis. Prolonged mercurial treatment caused a disappearance of all the troublesome symptoms. A. F. C.

Laufenauer: Hystero-Epilepsy in Boys. (*Jahrb. f. K.*, xxviii. 2.)

Puerile hystero-epilepsy is distinguishable from that which occurs in adults only in the fact that the phenomena of the disease are less marked and less typical. The hystero-epileptic attack has four stages,—the epileptic, that of extensive movements and contortions, that of positions of the body implying passion, and that of terminal delirium. Most of the paroxysms are, however, incomplete and abortive. Characteristic are certain

extravagant movements, which are accomplished with a certain facility, almost with elegance. The condition of the pupils in hystero-epilepsy furnishes information which has not been sufficiently appreciated. Difference in the size of the pupils is always noticeable in hysteria. On the hemianæsthetic or hyperæsthetic side the author always observed mydriasis with relation of reaction. Occasionally, when the illumination was only moderately good, the difference in the pupils disappeared, recurring again with intense light. Another common symptom was narrowing of the field of vision, achromatopsia, or dichromatopsia. The hysterogenic points, the ovaries, crown of the head, branches of the trigeminus, etc., are very important in making the diagnosis of puerile hystero-epilepsy. Pressure upon those points from which aura-sensations radiate may either release or restrain an attack of hystero-epilepsy. Hemianæsthesia and total anæsthesia rarely occur in children. Important etiological elements in puerile hystero-epilepsy, in addition to hereditary tendency, are forcible psychical impressions, dreams, and the habit of imitation. There seems to be a causal relation, to a certain extent, between phthisis in the parents and hysteria in the children, and, conversely, between hysteria in the parents and phthisis in the children. In the treatment of this condition complete isolation of the patients is requisite, with neither personal nor written communication with the customary surroundings. Iron, quinine, faradic and static electricity, should be administered, also hydrotherapy, massage, gymnastics, bromides for a short time, with both mental and physical diversion. The patient should also have systematic, earnest occupation.

A. F. C.

Koch: Concerning Chorea Minor. (*Jahrb. f. K.*, xxviii. 2.)

Statistical comparison of the works upon this subject of various English and French authors with Eulenburg, representing German authors, shows that the former found the percentage of females affected to be 26 to 28, while the latter found it to be 42.5; that is, the conditions favoring chorea minor are different in England and France from those in Germany.

The greatest number of cases occurred about the age of nine years, and 62.4 per cent. of all cases (in a very large series which was analyzed) occurred between the ages of seven and thirteen. After puberty the percentage of cases in the female sex reached 65 to 69 per cent. in Eulenburg's examination. Between October and March 66 per cent. of the cases occurred, 22 per cent. occurring in December, and 3 per cent. in September. In only 23 of 113 cases analyzed by the author did

he find clear evidence of hereditary influence in the way of causation. In 25 cases violent psychical excitement was the apparent cause, in 21 rheumatism, in 3 it was due to imitation, and in 3 to pregnancy. As to symptomatology, there were painful points, especially over the vertebræ, in 5 per cent. Pain in the lower abdominal region was an unusual symptom. Great deviations from the normal in the tendon reflexes were not often met. Disturbance of the psychical functions often occurred, but permanent loss of intelligence was not observed. Of 4 cases which ended fatally, all were complicated with endocarditis, and one-third of all the severe cases which were treated were complicated with articular rheumatism. Recurrences were observed in 21.6 per cent. of cases, at intervals varying between three months and eleven years. In 6.2 per cent. the duration of the disease was from one to seven years. Of 111 cases a causal relation was traced to rheumatism in 18.9 per cent., and of 153 cases there were valvular lesions in 13.7 per cent. and accidental murmurs in an additional 9.8 per cent. Chorea minor must be separated from the group of constitutional neuropathies. It consists in a transitory subacute or chronic change in certain portions of the central nervous system, which is conditioned upon the action of one or several irritants. The changes occur wholly or in great part in the pyramidal tract, whence the process may extend to the brain and cord. Chorea, polyarthrititis, and endocarditis may occur in a variable series. The primary affection usually has its seat in the nervous system, less frequently in the joints, and still less frequently in the endocardium. A. F. C.

**Sheadle:** The Influence of Treatment in Chorea, with Especial Reference to the use of Arsenic. (*Jahrb. f. K.*, xxviii. 2.)

Although some writers insist that the use of drugs has no bearing upon the course of chorea, the author found that of one hundred and sixty-seven cases in which the histories were studied by him, and in which the disease had lasted from thirteen to fifty-two weeks before treatment was begun, only one of them continued uncured at the expiration of twelve weeks after treatment was begun. The average duration of treatment was only thirty days. If expectant treatment alone were used, it was found that though the patients might improve a little at first, the disease would then continue for weeks without further improvement. In sixty-two cases which were treated by various methods the average duration of treatment was thirty-six days, while in one hundred and five others in which the treatment was exclusively arsenic the average dura-



tion of treatment was only twenty-six days. The arsenic treatment consisted in giving three to five drops of Fowler's solution in water or wine, two to three times daily, and gradually increasing the quantity until ten to twelve drops were taken at a dose. If symptoms of poisoning appeared the drug was suspended for two or three days, calomel given in purgative doses, and the arsenic resumed in small doses as soon as the symptoms would warrant it, being continued until all symptoms of chorea had disappeared. The constipation and indigestion which are so common in chorea were treated with calomel in purgative doses with or without jalap. In four cases in which large doses of arsenic were continued a long time the skin became bronzed as in Addison's disease. The arsenic may be used alone, or if necessary it may be combined with iron, opium, chloral, etc.

A. F. C.

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### III.—SURGERY.

Miller: Antisepsis in New-Born Children. (*Jahrb. f. K.*, xxviii. 2.)

The extension of the antiseptic theory to all directions in which surgery has any bearing has long been recognized. Among new-born children the application of this theory has not been so extensive, as a means of treatment, as could be desired, though for many reasons the human organism is more than ever subject to the attack of septic diseases at this period. It is only necessary to reflect for a moment upon the possible injuries which a child may receive at birth to realize the importance of antisepsis. Especially subject to septic diseases are the children who are brought to foundling asylums. Thus, at the Moscow Foundling Asylum, with the best care, the most scrupulous cleanliness, and the most thorough ventilation, there die every year from pyæmic processes from five hundred to nine hundred out of a total of sixteen thousand to seventeen thousand children who are received there yearly. In the month of February alone at this hospital forty per cent. of all the fatal cases are caused by pyæmia. During the other months of the year the mortality from this disease varies between fifteen and twenty-five per cent. of all the fatal cases. The causes of such an unfavorable state of affairs are believed to be the following:

1. Irrational treatment of the navel and the navel wound during the first day of life is the most common cause of septic diseases.

2. The septic agent may gain access to the system, in addition to the avenue just referred to, by means of injuries to the scalp during labor, by ulcerations of the mucous membrane of the mouth, especially in the case of aphthæ in atrophic infants, and by the anus. In some cases the gonorrhœal virus appears to have excited inflammation in the folds of the navel.

3. A considerable number of cases of pyæmia are traceable to intra-uterine life, and are caused by transmission of the poison with the blood through the placenta.

For the avoidance of septic diseases in new-born children in general, therefore, the following rules are recommended :

1. With regard to the first category of cases of pyæmia, it is not generally in our power to prevent the septic infection of children during fœtal life. Accoucheurs must be particular to enforce rigid antiseptic conditions during the last days of pregnancy and during labor, this applying to attendants, clothing, instruments, the patient herself, and the accoucheur himself.

2. To avoid pyæmia in the new-born from a gangrenous or putrid condition of the navel midwives must be carefully instructed as to proper care of the navel wound after the stump has fallen. The cord should be divided with scissors which have been made aseptic, perhaps by passing them through the flame of a spirit lamp. The ligature must be aseptic, the stump should be washed in a three- or five-per-cent. solution of salicylic acid or boric acid, and then covered with absorbent cotton. One should endeavor to obtain mummification of the stump as soon as possible, and for that purpose only dry dressings are indicated. Should the navel suppurate either before or after the fall of the stump, it should be carefully washed with a weak solution of carbolic acid, dried, and then receive an application of a two-per-cent. solution of nitrate of silver. After this only antiseptic powders should be used.

3. Since gonorrhœal virus appears to be responsible in some cases for inflammation of the navel, the latter may be avoided by using a two-per-cent. solution of nitrate of silver, the same as Crede has recommended for the eyes to prevent gonorrhœal ophthalmia. In any case in which the mother has leucorrhœa this application should be used without fail, for the eyes and for the navel.

4. Aphthæ are found in the mouths of almost all children in foundling asylums; some of them have it when they enter, and others get it after they have entered, for it is almost impossible to secure a careful cleansing of the mouth in every child in a hospital after each nursing. Not infrequently the

wet-nurses who nurse two babies neglect to cleanse their infected nipples sufficiently, and transmit the disease by this means from one baby to the other. The crowding of children in public institutions favors the extension of such diseases. In atrophic children, after the aphthous membranes have fallen there frequently remain ulcers or fissures in the mucous membrane, which act as avenues for the passage of septic material. To avoid infection, it is desirable in hospitals to insist upon the washing of the mouth at least once daily with an antiseptic solution,—perhaps of boracic acid,—after which the aphthous membrane should be touched with a solution of resorcin, hypermanganate of potash, boracic or salicylic acid, upon absorbent cotton, no piece of cotton being used for more than one application. The ulcerated portions should be touched with the nitrate of silver solution.

5. Since infection may be transmitted by the folds of the anus, it is essential in cases of erythema ani and rhagades that there also should be antiseptic treatment of these parts. The same remark applies to intertriginous patches and lesions of the skin of the head or any other portion of the body which may have been produced during labor.

6. The use of antiseptic precautions is also necessary in vaccination. In foundling asylums, where vaccination is performed soon after birth, erysipelas and phlegmonous inflammations have become much less common where antiseptics is employed. In the Moscow Foundling Asylum each child is bathed the day before it is vaccinated. Immediately before the vaccination clean clothes are put on the child, the nurse's hands are washed, and the arm of the child is washed with a disinfectant solution. As soon as the vaccination wound is dry the dried blood is washed off with a disinfectant. During the period of efflorescence and drying of the pustules the wound is again disinfected and covered with boracic or iodoform ointment. The stall in which the calf is kept is always clean, and the calf's abdomen is washed with sublimate solution at the time it is inoculated, and again when the lymph is taken. The vaccinating instruments and the glass tubes are also disinfected.

The greatest care must be used in washing the skin of newborn infants on account of its ready absorbability. A two-percent. solution of carbolyzed oil has been known to produce the most violent symptoms of intoxication. Salicylic acid is also too poisonous when used in solutions of ordinary strength. For very young children boracic acid is much the safest agent for disinfecting purposes, and its general use is therefore to be recommended to midwives.

A. F. C.



Alsberg : Malignant Tumor of the Right Kidney in a Child Five Years of Age. (*Rev. Mens. des Mal. de l'Enf.*, June, 1888.)

A girl five years of age who had previously been well suddenly had an attack of hæmaturia, the source of which could not be discovered. Three months later a swelling appeared in the right renal region, which was believed to be due to a malignant growth on account of its rapid development. The swelling was punctured, and the fluid withdrawn was examined microscopically. It showed the characteristic evidence of renal sarcoma. The tumor was extirpated by Bergmann's method, an incision being made upon the anterior aspect of the abdomen, the peritoneal cavity being avoided. The immediate results of the operation were sufficiently satisfactory ; there was no evidence of shock, and after two months the abdominal wound had completely cicatrized. Eleven months later the child died from a recurrence of the disease in the cicatrix, with extensive metastases in the liver and lungs ; the left kidney, however, was entirely healthy. The author suggests that one should always bear in mind the possibility of the presence of a malignant tumor in one kidney or the other when a child suffers from hæmaturia the cause of which is obscure. With regard to surgical intervention, it is of course desirable that a precise diagnosis should be made at the earliest possible moment.

A. F. C.

Marsh : Elements of Success in the Operation for Cleft Palate. (*Lancet*, July 7, 1888.)

Usually the operation for cleft palate is one of the most satisfactory of all plastic operations.

1. The mistake sometimes made is that of operating too early. Even when the cleft is limited to the soft palate operations had better be postponed until the child is between two and three years old or older, unless he is well grown and strong. In cleft of the hard palate operative treatment should be deferred until the child is at least three and a half years old. In the average run of cases it is better not to operate till the patient is between four and five. As growth proceeds, the fissure will tend to become narrower and the soft parts more fleshy and firm. The chances of success steadily increase as childhood advances.

2. Care must be taken to see that the patient is in good general health before the operation is performed.

3. As to the shape of the fissure and the conformation of the bones, the important points are the width of the fissure, the shape of its anterior end, and the height or pitch of the arch of the hard palate.

As to the anterior end of the cleft, when this is pointed like a thin wedge (Fig. 1) the shape is favorable, but when the anterior end is rounded (Fig. 2) the difficulty of closure will be considerably increased. As to the height of the palate and the shape of the arch, the higher the arch and the more it approaches the perpendicular the easier will the closure be; while the lower the arch the more difficult does closure become (Fig. 3).

FIG. 1.



FIG. 2.



FIG. 3.



When the edges of the cleft have been pared the soft parts on either side should be freely separated, not only from their general connections with the bones which they cover, but especially from their line of attachment to the posterior border of the horizontal plate of the palate bone. Separation is best effected by the use of blunt-pointed, curved scissors. Another point is that when the cleft is extensive the soft parts should be detached from the bones, not only along the borders of the cleft, but outward and forward nearly to the teeth. Another point is the relief of tension on the line of sutures by making lateral incisions. The incision should run backward and outward midway between the sutures and alveolar border. Posteriorly it is sufficient to divide the mucous membrane without cutting into the deeper layers. The operator must prolong the incisions until he finds that the parts have become distinctly flaccid.

Silver sutures should be used for the hard palate, and horse-hair, mainly, for the soft parts.

For the first four or five days the child should be fed exclusively on a fluid diet. No solid food should be given until the parts have healed and the sutures have been removed. As a rule no local application should be made to the palate. Certainly there should be no syringing. As a rule the suture should not be taken out till the tenth day.

Wainright: Early Incision, with Drainage of Joints, as a Substitute for Excision. (*Lancet*, May 5, 1888.)

The patient, a boy aged three, had a large abscess superficial to the periosteum, covering almost the whole of the outer

aspect of the left thigh, which was said to have resulted from a fall a fortnight previously. This was treated by antiseptic incision and drainage. When the wound had healed the right hip became inflamed. It was incised, and a quantity of pus evacuated. Carious bone was found in the anterior part of the neck of the femur, and removed by scraping. The wound healed, leaving a perfectly movable joint. In the discussion following the reading of the paper it was thought that incision and drainage was applicable in pyæmic abscesses, but that it was of doubtful utility in tubercular disease, and there was some doubt as to whether this case was one of pyæmia or tubercular disease.

Lunin: Conditions which prevent the Removal of the Tracheal Canula. (*Jahrb. f. K.*, xxviii. 2.)

Causes which operate against the removal of the canula in several cases which came under the author's observation were granulations, psychical influences, and paralytic or paretic conditions of the laryngeal muscles. There are different causes for the granulations which usually form in the upper and inner angle of the wound,—retention of the canula for too long a period, the shape of the canula, too long a wound, the fact that the portion of the respiratory tract lying above the canula is functionally inactive for a time, the pressure of the instrument, etc. In some cases no explanation for the granulations is apparent, and one must be contented by referring it to an individual predisposition on the part of the patient for such conditions. Paralysis of the muscles is another important cause for preventing the removal of the canula. Usually, in such cases, there is a functional affection of the abductor muscles of the glottis, whether due to fatty degeneration of the muscles themselves, or to atrophy of the nervous elements of the unused muscles. Those cases are of particular interest in which the inutility of the larynx for respiration is manifest only during sleep. If this occurs in cases in which the canula has been worn a long time, the explanation of Passavant is credible, that the vocal bands have become accustomed to approximation in breathing through the canula, so that there is need of a particular impulse of the will to excite to activity the muscles which have been weakened by disuse. In those cases in which the trouble occurs after the canula has not been worn longer than two weeks, a diseased condition of the abductor muscles must be assumed, which may consist in faulty development of their superficial layers, or in faulty relations to their antagonists.

A. F. C.



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